



2016 WEST VIRGINIA OVERDOSE FATALITY ANALYSIS

Healthcare Systems Utilization, Risk Factors, and Opportunities for Intervention

**2016 WV Overdose Fatality Analysis:
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and Opportunities for Intervention**

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Healthcare Systems Utilization, Risk Factors, and Opportunities for Intervention

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1 Executive Summary

West Virginia continues to lead the nation in overdose deaths per capita. This takes a significant toll on individuals, families, communities, and government resources. The purpose of this report is to study West Virginia overdose deaths to identify opportunities for intervention in the 12 months prior to death. Because of the urgency to slow and stop preventable overdose deaths, this report was released quickly to assist strategic planning. Future reports will benefit from the lessons learned, and will be able to identify more opportunities for intervention for those people at highest risk of overdose death.

To identify overdose deaths in West Virginia, this project began by examining death records for 881 individuals that died from an overdose in West Virginia during 2016. At the time of this report, 2016 death data remained preliminary, so the total number of 2016 overdose deaths will continue to rise. After a preliminary review of data, it was determined that only West Virginia residents would be included in the analysis which reduced the number of deaths for this review to 830. West Virginia residents were more likely to appear in the data sets included in this analysis, which increases the number of opportunities to identify interventions prior to death. Death records were matched to available data sources to determine whether the individuals utilized emergency medical services (EMS), behavioral health treatment, were prescribed controlled substances, were incarcerated in state-run facilities and/or were eligible for Medicaid.

The majority (81%) of overdose decedents interacted with at least one of the health systems in this report. Males were twice as likely as females to die from a drug overdose, but females were 80% more likely than males to use all the health systems in the 12 months prior to their death. This means that there are opportunities to intervene with people at risk for overdose. However, not all decedents interacted more than once with these resources, so each entity must be prepared to offer treatment at the time of interaction or have an established system for follow-up.

In terms of drug utilization, females were 7% more likely than males to have more than one drug in their system at their time of death, and 18% more likely to have three or more drugs. Decedents between the ages of 15-44 were more likely to die from fentanyl or heroin, while those between the ages of 45-64 were about as likely to die from fentanyl or heroin as from prescription drugs. A total of 272 decedents (33%) tested positive for a controlled substance, but no prescription at their time of death, indicating diversion of a controlled substance prescription.

The West Virginia Board of Pharmacy's Controlled Substances Monitoring Program (CSMP) documents the dispensing of schedule II-IV controlled substances. 91% of all decedents had a documented history within the CSMP. In the 30 days prior to death, nearly half (49%) of female decedents filled a controlled substance prescription in the 30 days prior to death, as compared to 36% of males. Opioids and benzodiazepines were the most common controlled substance prescriptions filled by decedents in the 12 months prior to their death. In addition, decedents were three times more likely to have three or more prescribers as compared to the overall CSMP population for 2016 (9% versus 3%). Decedents were more than 70 times likely to have

prescriptions at four or more pharmacies compared to the overall CSMP population for 2016 (7% vs. 0.1%).

Naloxone is a medication approved by the Food and Drug Administration (FDA) to prevent overdose death by opioids such as heroin, morphine, and oxycodone. The medication can be given by intranasal spray, intramuscular (into the muscle), subcutaneous (under the skin), or intravenous injection. Currently, the best data source for naloxone administration is EMS. Seventy-one percent of all decedents utilized emergency medical services within the 12 months prior to their death. Regardless of the type of EMS run, only 31% of decedents had naloxone administration documented in their EMS record. Twenty percent of decedents who had utilized EMS during the 12 months prior to death received naloxone at the EMS run associated with their death, while only 11% had a documented naloxone administration prior to the death associated EMS run. In addition, there may be a disparity in the overall emergency response to West Virginians older than 65, which warrants further study.

Decedents were much more likely to have Medicaid (71%) in the 12 months prior to their death as compared to West Virginia's adult population ages 19-64 (23%) (Kaiser Foundation). Ill-defined symptoms, musculoskeletal problems, injury and poisoning and other factors that influenced care were the most common diagnostic categories. Of those decedents with Medicaid, 85% utilized the benefit within 12 months prior to their date of death, excluding those decedents who only used the benefit within 48 hours of death. With regard to Emergency Department (ED) visits, 68% of decedents with Medicaid had at least one ED visit in the 12 months prior to death. Of the decedents with ED visits, 9% visited with within 48 hours of death, 22% made only one visit, and 69% visited two or more times.

Corrections data was obtained from the West Virginia Department of Military Affairs and Public Safety for information regarding incarceration in state sponsored prisons and jails. Over half (56%) of all decedents were ever incarcerated. Over three quarters of the decedents with a history of incarceration (77%) were male and 23% female. Of male decedents that were incarcerated within 12 months of death, 28% died within a month after release, compared to 21% of females. Nearly half, (46%) of individuals with only some high school education died within 30 days of their release.

Both black and white male decedents were at an increased risk for death from an overdose. Deaths were more likely to occur in individuals between the ages of 35 and 54 years. Decedents were also likely to have a high school education or less and be unmarried. Individuals who were never married were at the highest risk in this demographic category. Additional analysis of the death records revealed that males working in blue collar industry, industries that come with higher risk of injury, may be at increased risk for overdose death.

Overall, there were opportunities to prevent fatal overdoses among the 2016 overdose decedents. Emergency services appear to have had the most opportunity for intervention, followed by the CSMP and Corrections. Additional discussion regarding these opportunities can be found in the Discussion and Recommendations section within this report.

Summary of Key Findings

- The majority (81%) of overdose decedents interacted with at least one of the health systems in this report.
 - Males were twice as likely as females to die from a drug overdose, but females were 80% more likely than males to use all the health systems in the 12 months prior to their death.
- 33% of decedents tested positive for a controlled substance, but had no record of a prescription at their time of death, indicating diversion of a controlled substance prescription.
- 91% of all decedents had a documented history within the CSMP. In the 30 days prior to death, nearly half (49%) of female decedents filled a controlled substance prescription in the 30 days prior to death, as compared to 36% of males.
- Decedents were three times more likely to have three or more prescribers as compared to the overall CSMP population for 2016 (9% versus 3%). Decedents were more than 70 times likely to have prescriptions at four or more pharmacies compared to the overall CSMP population for 2016 (7% vs. 0.1%).
- 71% of all decedents utilized emergency medical services within the 12 months prior to their death. Regardless of the type of EMS run, only 31% of decedents had naloxone administration documented in their EMS record.
- Decedents were much more likely to have Medicaid (71%) in the 12 months prior to their death as compared to West Virginia's adult population ages 19-64 (23%).
- Over half (56%) of all decedents were ever incarcerated. Decedents were at an increased risk of death in the 30 days after their date of release, especially in decedents with only some high school education.
- Males working in blue collar industry, industries that come with higher risk of injury, may be at increased risk for overdose death.
- Overall, there were opportunities to prevent fatal overdoses among the 2016 overdose decedents. Emergency services appear to have had the most opportunity for intervention, followed by the CSMP and Corrections.

2 Introduction (Background and Impact on West Virginia)

2.1 Purpose of Report

The West Virginia Department of Health and Human Resources Bureau for Public Health (BPH) is West Virginia's state health department. As such, BPH has unique authority, surveillance and evaluation capacity, and working relationships with other stakeholders at the state level. Consequently, BPH has been charged with conducting an analysis of West Virginia's 2016 overdose decedents. The purpose of this work is to: (1) facilitate quality improvement (identify where/when there were opportunities for intervention); (2) inform the design of a West Virginia overdose decedent profile and associated risk (of overdose death)

indicators for healthcare provider education (as well as the public); and (3) create a reproducible model for state action to address the opioid epidemic.

2.2 Overview of West Virginia

West Virginia is a mostly rural state and the only US state located entirely within the Appalachian region. Even so, West Virginia is located within 500 miles of 60% of the nation's population. Winding secondary roads connect the majority of the state's population, with little to no public transportation available between many of the small, isolated towns. Therein lies the single most often cited issue with access to healthcare for many of the state's residents.

West Virginia reached its population peak more than a half century ago with 2,005,552 residents counted in the 1950 US Census. The State's population has not exceeded the 2 million mark since then, but has fluctuated between 1.7 and 1.9 million depending on the State's economy. Charleston, the state capital and largest city, and Huntington are the only cities with populations nearing 50,000 people. Forty-four of the State's 55 counties are federally designated as non-metropolitan by the federal Office of Management and Budget, and 50 counties are designated fully or in part as Health Professional Shortage Areas and/or Medically Underserved Areas. Chronic conditions are more prevalent among rural populations. With a 2016 estimated population of 1,831,102 people, 714,605 (39%) live in rural West Virginia (United States Department of Agriculture Economic Research Service, 2017). The rural Appalachian nature of West Virginia increases the risk of chronic illness and makes it difficult to address many of the State's public health needs and conditions.

Appalachia is distinguished by mountainous terrain, geographic isolation and a history of economic underdevelopment. Although conditions in Appalachia have improved in recent years, these improvements have not benefited all communities equally. Isolated, rural areas continue to experience the most adverse social, economic, and educational deficits, resulting in significant health disparities in the incidence, prevalence, mortality, burden of chronic diseases and their risk factors, as well as access to care. Not surprisingly, West Virginia consistently ranks in the top three nationally in adults self-reporting their general health as either "fair" or "poor." Nearly 17% of individuals could not afford needed healthcare services and approximately 22.8% of adult West Virginians do not have a specific primary care physician or healthcare provider (West Virginia Health Statistics Center, 2017).

According to 2016 US Census Bureau estimates, West Virginia is comprised of 51% males and 49% females (US Census Bureau, 2016b). The median age of West Virginia residents is 41.8 years, and 17% of the population is over the age of 65. West Virginia has a primarily white population (93.6%) with the remaining residents Black or African-American (3.3%), Asian (0.9%), or another race (2.2%). Eighty-six percent of West Virginia residents have attained a high school education or above. The highest proportion of West Virginia residents have attained a high school diploma or equivalent (41%), followed by some college (19%), and any college degree (26%).

According to America's Health Rankings, West Virginia ranked poorly among states in 2015 across a number of health measures, including overall health, obesity, and physical inactivity. Perhaps most concerning is a decline in its rank in overall health from 41st in 2011 to 46th in 2017. In 2016, West Virginia also ranked 50th in terms of smoking, with 24.8% of the adult population indicating that they currently smoke daily (CDC National Center for Chronic Disease Prevention and Health Promotion Division of Population Health, 2016). In 2016, West Virginia experienced its first decline in smoking in over 10 years.

There are three tertiary care hospitals located throughout the state: West Virginia University Hospital (Ruby Memorial) located in Morgantown, Charleston Area Medical Center (CAMC) located in Charleston, and Cabell/Huntington Hospital located in Huntington. There are 51 Rural Health Clinics in West Virginia (The Henry J Kaiser Family Foundation, 2016a) and 28 Federally Qualified Health Centers provide services at 270 sites in the State (The Henry J Kaiser Family Foundation, 2015). Six percent of West Virginia residents lack health insurance (The Henry J Kaiser Family Foundation, 2016c). Estimates from 2016 indicate a poverty rate of 18.7% exists in rural West Virginia, compared to 17.4% in urban areas of the state (US Census Bureau, 2016a).

Congress passed the Patient Protection and Affordable Care Act (ACA) which was signed into law on March 23, 2010. Healthcare reform dramatically impacted health programs and services in West Virginia. Eligibility standards for Medicaid in West Virginia also changed significantly. With the elimination of the dependent child requirement and increased income limits, virtually any legal resident making less than 138% of the federal poverty level qualifies for Medicaid coverage.

2.3 Overdose Trends in West Virginia

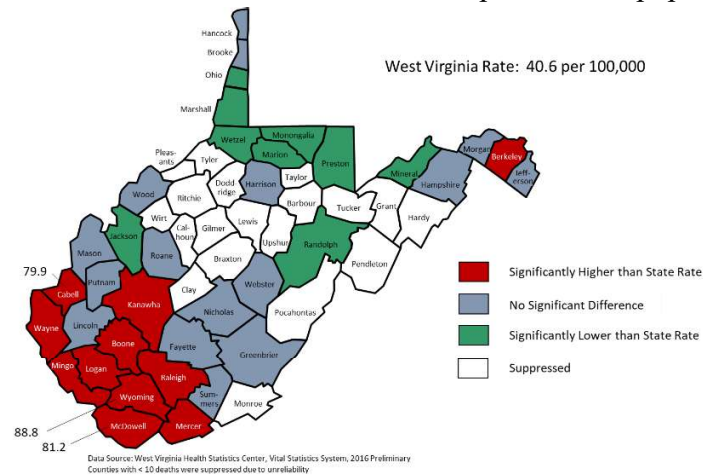
In 2015, West Virginia led the United States in overdose deaths per capita, with 41.5 deaths per 100,000 individuals in the population (CDC/NCHS National Vital Statistics System, 2017). In comparison, the second highest state, New Hampshire, had a rate of 34.3.

Preliminary data show that 830 drug overdose-related deaths occurred among West Virginia residents in 2016. From 2015-2016, there was a 20% increase in occurrence overdoses. Drug overdose was the sixth leading cause of death, behind diseases of the heart, cancer, chronic lower respiratory disease, stroke, and dementia. Approximately 705 (85%), of the overdose deaths that occurred in West Virginia were opioid-related (West Virginia Health Statistics Center, 2017). Moreover, for every fatal poisoning, there are even more non-fatal overdoses, persons abusing opioids, and persons using opioids for non-medical use. These staggering statistics make West Virginia ground zero of a drug epidemic forcing an evolution in the state's public health response.

From 2014 to 2016, 2248 West Virginia residents died from an overdose. Eleven counties had overdose death rates significantly higher than the state average for that period, and all but one of these counties are in the southern portion of the state. Among the 55 counties in the state of West Virginia, during the period of 2014 to 2016, the highest overdose death rate

(88.8 deaths per 100,000 population) was observed in Wyoming County (West Virginia Health Statistics Center, 2017).

West Virginia Resident Overdose Crude Death Rates per 100,000 population, 2014-2016



2.3.1 West Virginia Drug Overdose Deaths Historic Overview 2001-2015

Between 2001 and 2015, 7209 people died from overdose in West Virginia. The number of people who died in West Virginia in 2016 (884) is more than four times the number of people who died in 2001 (212). Males were consistently more likely to die from overdose than females and make up 63% of the overdose deaths that occurred from 2001 to 2015 (West Virginia Health Statistics Center, 2017). Among all overdose deaths that occurred in West Virginia (including non-residents who died in the state), most overdose deaths involved at least one opioid, and the percentage of overdose deaths involving an opioid increased from 70% in 2001 to 87% in 2015.

Since 2014, the percent of overdose deaths in West Virginia involving fentanyl or fentanyl analogs has increased tremendously, from 9% of overdose deaths involving fentanyl or fentanyl analogs to 41% of overdose deaths in 2016, nearly a five-fold increase (West Virginia Health Statistics Center, 2017). Throughout this report, any reference to fentanyl includes its analogs, unless otherwise noted. A US Centers for Disease Control and Prevention (CDC) study of overdose deaths involving fentanyl and fentanyl analogs between July and December of 2016, found that 20% of overdose deaths involved fentanyl analogs, and 55% of deaths involved fentanyl (O'Donnell et al., 2017). An investigation of a cluster of non-fatal overdoses that occurred in August 2016 in Cabell County, West Virginia provided evidence that a high-potency synthetic opioid had entered the local illicit drug supply and contributed to 20 persons overdosing within a 53-hour period (Massey et al., 2017). Three cases were positive for carfentanil (Massey et al., 2017), a large animal sedative, which is estimated to be 10,000 more potent than morphine (O'Donnell et al., 2017). As of October 16, 2017, 57% of overdose deaths occurring in 2017 were related to fentanyl (West Virginia Health Statistics Center, 2017).

2.3.2 Polypharmacy

Deaths related to drug overdose are often preceded by substance misuse, substance use disorder, and addiction. Overdose may result from the use of illicit drugs, such as heroin, cocaine, and methamphetamine, but can also result from the misuse of prescription medications and over-the-counter (OTC) medications. Increasingly, polypharmacy (the use of multiple drugs) is observed among overdose decedents in West Virginia. In West Virginia, the average number of drugs involved in fatal overdoses has increased, from 2.3 drugs per fatal overdose in 2001 to 3 drugs per fatal overdose in 2015 (West Virginia Health Statistics Center, 2017). Among the 830 West Virginians included in this report who died from overdose in 2016, 86% had multiple drugs in their system at the time of death.

2.3.3 Maternal Drug Use and Neonatal Abstinence Syndrome

In 2009, neonatologists across the state reported that neonatal intensive care units (NICU) were at capacity as result of infants withdrawing from drugs. In an attempt to better understand the problem, the BPH Office of Maternal, Child and Family Health (OMCFH) sponsored an umbilical cord blood study that confirmed intrauterine substance exposure in infants was an alarming concern.

The problems did not end at overflowing NICUs. In 2013, the number of children in foster care also began to rise rapidly along with enrollment in West Virginia's Birth to Three / Early Intervention Program. In addition, prenatal substance use was regularly identified as present in infant death reviews. During this time period, national estimates for neonatal abstinence syndrome (NAS) projected West Virginia at nearly six times the national average. Furthermore, preliminary analysis of West Virginia's maternal mortality, which includes any death within a year of giving birth, identified 18 maternal deaths in 2016, of which 44% either had a documented substance abuse problem or died from an overdose. This demonstrates that while drug abuse may not be the direct cause of death, it may contribute to the circumstances of death.

In September 2014, West Virginia neonatologists and pediatricians met with hospital coders and members of the Perinatal Partnership to develop a standardized definition for neonatal withdrawal and guidance on documenting exposure and withdrawal in newborns. West Virginia's definition states:

- NAS includes neonatal withdrawal from many substances, not just opioids;
- NAS is exposure with clinical symptoms; and
- NAS is not limited to those cases that require pharmacological treatment.

Once the workgroup agreed upon a definition of NAS, selected neonatologists and Perinatal Partnership staff traveled to all birthing centers and provided on-site training regarding the diagnostic criteria. After the training was complete, physicians worked with OMCFH to develop substance abuse questions for addition to the West Virginia Birth Score Instrument, administered by West Virginia University through a grant from OMCFH. The Birth Score began collecting Intrauterine Substance Exposure and NAS data on October 1, 2016.

Substance exposure includes any medication prescribed and not prescribed by a physician that has a psychoactive affect. It is documented through self-report, the prenatal record, positive maternal drug test, unknown, or other. NAS is documented when the infant has clinical signs consistent with NAS diagnosis. Findings from October 1, 2016 to September 30, 2017 indicate that 2691 infants (14%) experienced intrauterine substance exposure and 1023 infants (5%) were diagnosed with NAS (West Virginia University Birth Score Office, 2017).

2.3.4 Early Life Experiences

An adverse childhood experience (ACE), describes a traumatic event in a person's life occurring before the age of 18 that the person recalls as an adult. ACEs are sometimes referred to as toxic stress or childhood trauma. Several ACE studies reveal strong relationships between ACEs and many later-life health risks and conditions. For example, higher ACE scores are associated with obesity, substance abuse, depression, lung, heart, and liver disease. ACEs are also linked to homelessness and criminal justice involvement. A number of studies link childhood adversity to substance use disorder later in life and injection drug use (Marotta, 2017).

According to the West Virginia HSC, West Virginia adults reported an average of 1.2 ACEs during their childhood (West Virginia Health Statistics Center, 2017). While more than half (51%) of West Virginia adults report zero ACEs, more than one in 10 (11%) reported four or more. In West Virginia, the most common ACE was household substance abuse, followed by separation/divorce, verbal abuse, mental illness, domestic violence, physical abuse, sexual abuse, and incarceration of a household member. In addition, ACEs were reported in 29% of those identified with a substance abuse problem, 17% of those with mental illness, and 8% of those who had been incarcerated. Approximately 18% of West Virginians are considered high-risk for having or developing health problems, which means that they reported three or more ACEs. Adults between the ages of 18 and 54 years were more likely to be considered high-risk, and females were more likely to be identified as high-risk compared to males. Adults who had graduated from college were the least likely to be considered high-risk, and those with the highest income category were the least likely to be high-risk.

2.3.5 Retail Prescriptions Filled at Pharmacies

According to the Kaiser Family Foundation, West Virginia was tied with Kentucky in 2016 for the highest number of retail prescriptions filled at pharmacies with a rate of 20 prescriptions per capita for 2016 (The Henry J Kaiser Family Foundation, 2016b). Alaska had the lowest rate with only seven prescriptions. West Virginia males filled an average of 16.1 prescriptions, while females filled 23.6. The number of prescriptions increased with age with youth 0-18 filling only 6.1 prescriptions, adults ages 19-64 filling 20.2, and adults over 65 filling 30.1.

2.4 Overview of Current Overdose Prevention Efforts

The West Virginia Department of Health and Human Resources Bureau for Behavioral Health and Health Facilities (BBHBF) is the federally designated state authority for mental health and substance abuse, as well as the lead agency for intellectual and developmental disabilities and provides planning, direction, training, and funding for prevention, treatment, and recovery services throughout the state. Together, the BBHBF and the BPH leverage federal funding to facilitate much of West Virginia's state and community overdose prevention efforts. The available funding is directed towards:

Substance Abuse and Mental Health Services Administration (SAMHSA) Formula Funding

- Community Mental Health Services Block Grant
- Substance Abuse Prevention and Treatment Block Grant
- Projects for Assistance in Transition from Homelessness (PATH)
- Protection and Advocacy for Individuals with Mental Illness

SAMHSA Discretionary Funding

- Substance Abuse Prevention
- Substance Abuse Treatment

CDC

- Enhanced State Surveillance of Opioid-Involved Morbidity and Mortality (Cooperative Agreement)
- Prescription Drug Overdose Prevention for States (Cooperative Agreement)

2.4.1 Enhanced Surveillance

As established in the 2017 West Virginia Drug Control Policy Act (W. Va. Code §16-5T), the Office of Drug Control Policy (ODCP) facilitates the exchange of necessary data and information with the various Bureaus of the West Virginia Department of Health and Human Resources, including the BPH, the West Virginia Department of Military Affairs and Public Safety, the West Virginia Department of Administration, the West Virginia Administrator of Courts, the West Virginia Poison Control Center, and the West Virginia Board of Pharmacy. Procedures are now in place to enable the analysis of multiple data sets to inform stakeholders with new insight into overdose-related deaths.

The BPH has leveraged CDC funding to improve the timeliness of fatal and nonfatal opioid overdose surveillance, including overdoses related to opioid pain relievers and heroin. In coordination with the BPH and the Appalachian High Intensity Drug Trafficking Area, the West Virginia Board of Pharmacy is designing and testing procedures for linking existing health outcome and law enforcement data with CSMP data. Work is underway to develop a process to identify individuals who overdosed, but survived.

Additional work includes collaboration with the West Virginia University School of Medicine, to examine the role of opioids on West Virginia's NAS rates.

2.4.2 Provider Education and Clinical Practice Tools

2.4.2.1 Enhancing and Maximizing the Prescription Drug Monitoring Program (known in West Virginia as the CSMP)

Over the past two years, the West Virginia Board of Pharmacy has significantly expanded its capacity to conduct internal analyses of CSMP data. The following best-practices are now being implemented:

- identifying high-risk areas necessary to improve criteria and thresholds for unsolicited reporting;
- using the CSMP as a public health surveillance tool by identifying the most relevant and sustainable analysis and dissemination of data that drives public health action in the state; and
- reducing barriers to CSMP registration and use.

2.4.2.2 Opioid Prescribing Guidelines

In October 2016, then West Virginia Governor Earl Ray Tomblin announced that the State's public insurance payers would operationalize and subsequently implement the CDC Guideline for Prescribing Opioids for Chronic Pain as part of the state's ongoing efforts to curb opioid abuse, overdoses, and deaths (West Virginia Department of Health and Human Resources Office of Communications, 2016).

2.4.2.3 Academic Detailing to Enhance Uptake of Evidence-Based Opioid Prescribing Guidelines

The BPH, via its West Virginia Violence and Injury Prevention Program, now employs trained personnel who make personal visits to prescribers' offices to disseminate clinically relevant and rigorously sourced information regarding chronic opioid therapy strategies. Known as academic detailing, the concept for this activity is based, in part, on the success of educational outreach by pharmaceutical companies in marketing drugs to clinicians. The objective of this health system intervention is to align the state's prescribers with the CDC Guideline for Prescribing Opioids for Chronic Pain by closing the gap between the best available evidence for actual clinical practice so that clinical decisions are based only on the most current and accurate evidence.

The BBHMF has initiated discussions with the administrations of the state's three medical schools for addiction-related curriculum action. Likewise, the BBHMF provides funding for the annual Appalachian Addiction and Prescription Drug Abuse Conference.

2.4.3 Insurer and Health System Improvements to Reduce Overdose Risk

Utilizing the CDC Guideline for Prescribing Opioids for Chronic Pain in coordination with the West Virginia University School of Pharmacy and BPH, West Virginia Medicaid and the Public Employees Insurance Agency (PEIA) implemented a Coordinated Care Program for patients on chronic opioid therapy. This Program affects 42% of the State's overall population, and makes use of: (1) prior authorization after the stipulated opioid threshold;

and (2) patient “lock in,” a policy that restricts the patient to one physician, one pharmacy, and/or one hospital for medical needs for a certain period of time.

In addition, the West Virginia Department of Health and Human Resources Bureau for Medical Services (BMS) gained approval for a Medicaid Section 1115 waiver to develop a continuum of care for individuals with substance use issues. Services covered under the waiver will include:

- Screening, Brief Intervention and Referral to Treatment (SBIRT)
- Naloxone availability initiative
- Methadone/medication assisted treatment (MAT)
- Intensive outpatient services
- Partial hospitalization services
- Clinically managed low-intensity residential services
- Clinically managed population-specific high-intensity residential services (adult only)
- Clinically managed high-intensity residential services
- Medically monitored high-intensity inpatient services
- Medically managed intensive inpatient services
- Ambulatory withdrawal management without extended on-site monitoring (outpatient withdrawal management)
- Ambulatory withdrawal management with extended on-site monitoring (outpatient withdrawal management)
- Clinically managed residential withdrawal management (residential withdrawal management)
- Medically managed intensive inpatient withdrawal management
- Peer supports
- Care coordination

2.4.4 Patient and Public Education

Beginning January 2018, the BPH, in coordination with the ODCP, will leverage CDC funding to launch a comprehensive and unified educational campaign to reach a broad audience including the public, opioids users, social networks, and professionals.

2.4.5 Community-Level Prevention

In 2017, the West Virginia University Injury Control Research Center in coordination with the BPH and BBHFF, conducted a statewide naloxone distribution program. West Virginia’s non-EMS initial responders (law enforcement and fire service) and community-based naloxone “take-home” programs (e.g., harm reduction programs, health departments, and related organizations whose patients or clients may be at high-risk for overdose) were targeted to widen the availability of naloxone in support of the *Access to Opioid Antagonists Act* (W. Va. Code §16-46).

- Programs were prioritized by risk level using overdose mortality data and an assessment of naloxone need.
- From February through July 2017, more than 8200 naloxone rescue kits were delivered to existing and new programs in 38 of West Virginia 55 counties.
- Recently, more than 1200 additional naloxone rescue kits were provided to coalitions in Cabell, Kanawha, and Mercer counties; and approximately 400 more kits will be provided to Berkeley County by the end of 2017.

In 2017, 11 agencies across West Virginia received funding to establish or expand harm reduction programs (HRPs). As a result, three agencies will establish new HRPs, and eight will expand or strengthen existing programs (West Virginia Department of Health and Human Resources Office of Communications, 2017). Harm reduction is a set of comprehensive, evidence-based strategies that provide a variety of services to persons who inject drugs (Harm Reduction Program Guidelines and Certification Procedures, 2017). Such services can reduce the transmission of bloodborne pathogens, such as Human Immunodeficiency Virus (HIV) and viral hepatitis, reduce risk behaviors, and facilitate linkage and referral to treatment for substance use, behavioral health, and other support services (West Virginia Office of Epidemiology & Prevention Services, 2017).

Through a collaborative partnership, the BBHFF, BPH, and Claude Worthington Benedum Foundation, funded the West Virginia Perinatal Partnership to implement an early intervention program for pregnant women who use substances which was titled Drug Free Moms and Babies (DFMB). The DFMB Programs seek to identify women who are pregnant and addicted, engage them, provide physical and behavioral health screening and addiction treatment, regular obstetrics (OB) services, and recovery supports during pregnancy and post-partum with a goal of babies being delivered drug free, supporting connections to home visiting and other coordinated follow-up as needed. West Virginia DFMB Programs include:

- Shenandoah Valley Medical Systems, Inc., Martinsburg, West Virginia
- Thomas Memorial Hospital, South Charleston, West Virginia
- Greenbrier Valley Medical Center, Ronceverte, West Virginia
- Charleston Area Medical Center (CAMC) Women's and Children's Hospital, Charleston, West Virginia
- Women's Healthcare – Davis Medical Center, Elkins, West Virginia
- Marshall Health – Department of Obstetrics and Gynecology, Huntington, West Virginia
- Tug River Health Association, Inc., McDowell County, West Virginia
- Weirton Medical Center, Weirton, West Virginia
- Wheeling Hospital, Wheeling, West Virginia
- West Virginia University Medicine, Obstetrics and Gynecology Department, Morgantown, West Virginia

- Valley Health Systems, Huntington, West Virginia

2.4.6 Drug Abuse Treatment and Recovery Support

With the Governor's Office approval and support, the 844-HELP4WV call line (Behavioral Health Information, Referral and Outreach Call Center), was launched on September 9, 2015 as a centralized point of entry for accessing and navigating statewide substance abuse and other behavioral health resources, improving access and immediate referral to appropriate levels of care, consistency in referral mechanisms and access to appropriate community supports.

The West Virginia University Medicine Comprehensive Opioid Addiction Treatment (COAT) has increased the availability of MAT. The COAT program is being expanded through a "hub-and-spoke" model. In addition, West Virginia has expanded access to office-based MAT via waived physicians for buprenorphine.

3 General Methodologies

In order to identify overdose deaths in West Virginia, this report began with examining death records for 881 individuals that died from an overdose in West Virginia during 2016. At the time of this report, 2016 death data remained preliminary, so the total number of these overdose decedents from 2016 may change. After a preliminary review of data, it was determined that only overdose decedents who had West Virginia residency be considered further in this report, thus reducing the number of deaths to 830 decedents. The rationale for this inclusion criteria was that West Virginia residents were more likely to engage the healthcare systems in West Virginia, and thus appear in the data sets included in this report, and in turn provide opportunities to identify interventions prior to death.

Demographic information including gender, age, race, marital status, and education level was established from the death record. Death records were matched to available data sources to determine whether the individuals utilized EMS, behavioral health treatment, were prescribed controlled substances, were incarcerated in state-run facilities and/or were eligible for Medicaid. Death records, EMS records, behavioral health treatment records, and Medicaid eligibility status/claims are data sets housed within the West Virginia Department of Health and Human Resources. The CSMP is housed with the West Virginia Board of Pharmacy and incarceration records are located within the West Virginia Department of Military Affairs and Public Safety.

Data sharing agreements were established with each agency and records were matched by name, date of birth, and social security number. Once each data set was matched against the death record, a combined de-identified data set was compiled to analyze the data. The death record was matched against each data set because it is the official document that established both the death itself and cause of death. In this report, only those records coded as an overdose were selected for inclusion. Because some death records are still being finalized from 2016, only 830 resident deaths were included in this report.

3.1 West Virginia Department of Health and Human Resources Health Statistics Center
This analysis utilized death records from the West Virginia Department of Health and Human Resources Health Statistics Center (HSC). Records of all births, deaths, marriages, divorces, fetal deaths, and induced termination of pregnancies are collected and maintained by the HSC's Vital Registration Office. Death records were analyzed to track demographic trends and identify characteristics of births and deaths in West Virginia. This information is made available for planning and policy purposes.

In a preliminary report of overdose deaths in 2016, there were 881 deaths (preliminary data) in West Virginia that were determined to be related to drug overdose. Fifty-one of these deaths occurred in non-residents and were excluded from this report, because they were not expected to appear in the West Virginia healthcare systems that were analyzed. This exclusion criteria resulted in 830 West Virginia resident deaths due to overdose that occurred in 2016. Demographic information including gender, age, race, marital status, and education were established from the death record. Death records were then matched to other available data sources to determine the extent to which healthcare systems were utilized. At the time this report was initiated, there were 884 identified deaths (preliminary data) in West Virginia that were determined to be related to drug overdose. Regardless of whether decedents utilized healthcare services in West Virginia, non-resident deaths were excluded from the analysis. The data systems available for analysis only included services provided within West Virginia.

3.2 West Virginia's Controlled Substances Monitoring Program

West Virginia's Controlled Substances Monitoring Program (CSMP) facilitates the collection, analysis, and reporting of information on the prescribing, dispensing, and use of controlled substances. The system assists state regulators plus authorized prescribers and dispensers to monitor controlled substances to prevent the diversion, abuse, and misuse of controlled substance prescription medication. The use of data collected provides the data for education and information, early intervention, prevention of diversion, investigation, and enforcement of existing laws governing the use of controlled substances. This serves as a valuable tool in the effort to protect the health and welfare of the citizens of West Virginia by reducing the abuse of prescription drugs.

Data from the CSMP were used to analyze prescription utilization patterns by the 830 decedents.

3.3 West Virginia Department of Health and Human Resources Bureau for Medical Services (Medicaid) Eligibility and Claims

The West Virginia Department of Health and Human Resources Bureau for Medical Services (BMS), is the designated single state agency responsible for the administration of the State's Medicaid program. BMS provides access to appropriate healthcare for Medicaid-eligible individuals. Authorized under Title XIX of the Social Security Act, Medicaid is an entitlement program financed by the state and federal governments and administered by the states. The West Virginia Medicaid program is administered by the West Virginia

Department of Health and Human Resources. Federal financial assistance is provided to states for coverage of medical services for specific groups of citizens.

Medicaid eligibility and claims data were analyzed for utilization of Medicaid benefits, use of EDs, and diagnosis.

3.4 West Virginia Department of Health and Human Resources Office of Emergency Medical Services

The West Virginia Department of Health and Human Resources Office of Emergency Medical Services (OEMS) is tasked with overseeing the emergency care system in West Virginia. The OEMS:

- Inspects, licenses, and regulates EMS agencies
- Certifies EMS personnel such as Paramedics and Emergency Medical Technicians
- Designates Trauma centers
- Categorizes ED with regards to stroke
- Investigates allegations of violations of code or policy by EMS agencies or personnel
- Provides the technical infrastructure over which the State emergency communications system runs

Data from the OEMS were used to understand utilization of ambulance services, and naloxone administration.

3.5 West Virginia Department of Health and Human Resources Bureau for Behavioral Health and Health Facilities

The West Virginia Department of Health and Human Resources Bureau for Behavioral Health and Health Facilities (BBHBF) is the federally designated state authority for mental health and substance abuse, as well as the lead agency for intellectual and developmental disabilities and provides planning, direction, training, and funding for prevention, treatment, and recovery services throughout the state. These data were analyzed to understand how decedents interacted with State funded behavioral health providers. Data from BBHBF do not include any information from private mental health facilities.

3.6 West Virginia Department of Military Affairs and Public Safety (Corrections)

The West Virginia Department of Military Affairs and Public Safety's Division of Corrections (WVDOC) is a state agency which houses convicted felons. WVDOC facilities include the Central Office, 17 Correctional Facilities including three Work Release Centers, 14 Parole Offices, one Training Academy and one Prison Industries Main Office. These data were analyzed to determine how many of the decedents had a history of incarceration in State run facilities.

4 Results

4.1 General Demographics of West Virginia

According to the US Census Bureau, West Virginia is comprised of 51% males and 49% females. The median age of West Virginia residents is 41.8 years, and 17% of the population is over the age of 65. West Virginia has a primarily white population (93.6%) with the remaining residents Black or African-American (3.3%), Asian (0.9%), or another race (2.2%). Eighty-five percent of West Virginia residents have attained a high school education or above. The highest proportion of West Virginia residents have attained a high school diploma or equivalent (41%), followed by some college (19%), and any college degree (26%) (US Census Bureau, 2016a).

Table 1 below presents the marital status for West Virginians overall:

Table 1

Marital Status		
Marital Status Males	Estimate	Percent
Never married	234,396	31.2
Now married, except separated	385,802	51.3
Separated	10,690	1.4
Widowed	26,021	3.5
Divorced	94,675	12.6
Marital Status, Females	Estimate	Percent
Never married	185,177	23.7
Now married, except separated	380,140	48.7
Separated	13,200	1.7
Widowed	92,719	11.9
Divorced	109,341	14.0

Source: <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>

4.2 Overview of Data Sets

Table 2 provides selected demographic information for the major data sources used in this report.

Table 2

	All Decedents	EMS (Run any time 12 months prior to death)	EMS (Run within 48 hours of death)	BBHHF	CSMP (Ever)	CSMP (12 month)	CSMP (30 Day)	Medicaid (Any time 12 months prior to death)
Males	557	392	206	196	506	348	199	368
Females	273	196	89	114	253	197	133	220
Total	830	588	295	310	759	545	332	588
15-24	55	31	20	18	48	22	*	38
25-34	188	126	55	82	166	107	45	139
35-44	238	172	93	97	226	163	92	180
45-54	211	167	87	70	192	151	114	152
55-64	118	84	38	39	111	89	67	74
65 +	20	8	*	*	16	13	10	5
White	782	560	285	292	719	520	321	556
Black	44	26	10	17	37	22	9	28
Other/Unknown	*	*	*	*	*	*	*	*
Never Married	330	227	111	128	300	190	102	244
Married	206	144	81	80	187	144	87	131
Divorced	253	184	87	88	232	174	116	188
Widowed	40	32	16	14	39	36	26	25
Unknown	*	*	*	*	*	*	*	*
Less than HS	29	21	10	11	25	21	13	23
Some High School	146	104	52	46	135	95	59	120
High School	483	348	174	187	440	305	178	343
Some College	119	80	43	46	112	82	49	80
College Degree	53	35	16	20	47	42	33	22

4.3 Key Findings on Healthcare Systems and Risk Factors

4.3.1 Gender: Healthcare Systems and Risk Factors

Male decedents were less likely to have interacted with any of the three healthcare systems in this report (BBHHF, EMS, CSMP) than female decedents. Medicaid and Corrections were not considered health systems for this portion of the analysis. Approximately 22% of male decedents did not interact with any health system, while only 13% of female decedents had no interaction. Females were also more likely to have interacted with all three systems than male decedents, 18% and 10% respectively. One system interaction was the most

common for both males (38%) and females (39%). This implies that although the majority (81%) of decedents are interacting with systems, for almost 40% of decedents, there may be only one opportunity to link them to treatment.

Figure 1

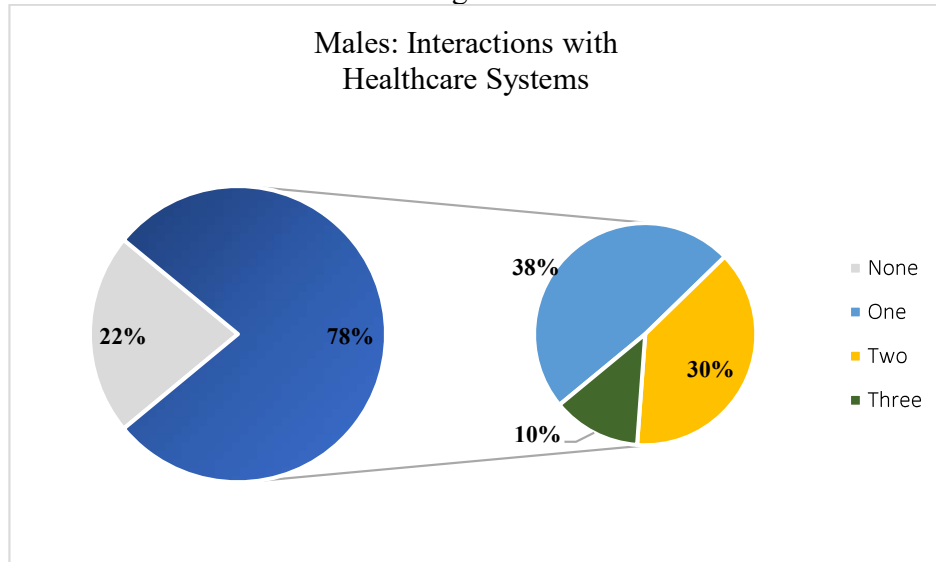
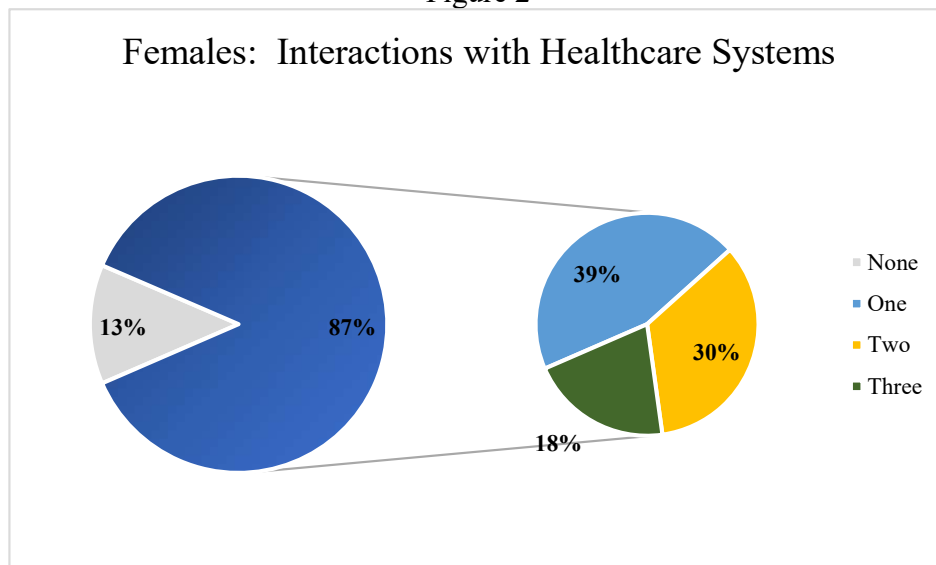


Figure 2



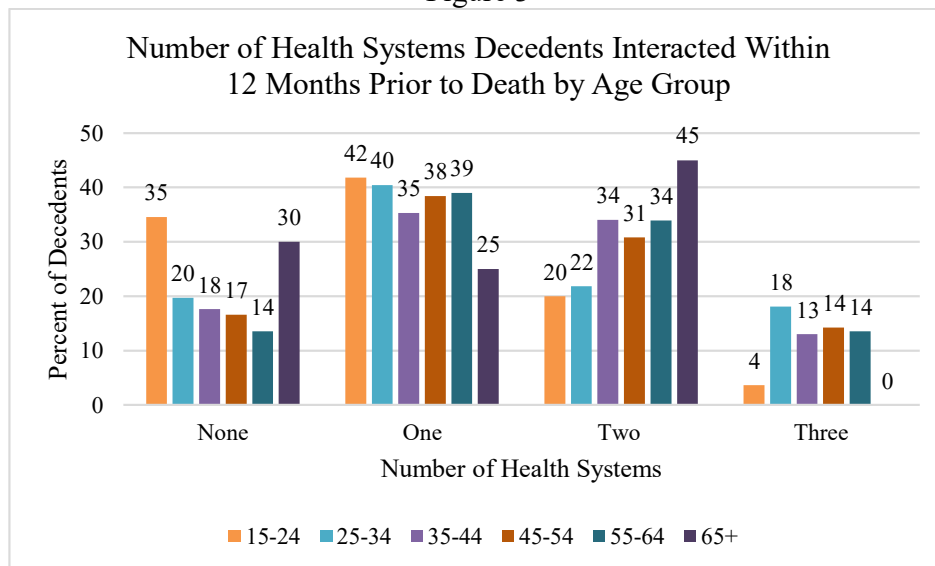
4.3.2 Age: Healthcare Systems and Risk Factors

The youngest and the oldest groups (15-24 year-old and 65+) had the highest percentage of decedents with no health system interaction (35% and 30%, respectively). The oldest group (65+) did not interact with all three systems and only 4% of the youngest decedents interacted with all three systems.

While the youngest and oldest decedents were comparable for no interaction and maximum interaction, there are differences in number of systems used. A larger percentage of the 15-24 age group interacted with only one health system (42%) compared to the 65+ age group, with 25% of decedents in this age group interacting with only one health system. Whereas, a larger portion of the 65+ age group interacted with two systems (45%) while only 20% of the 15-24 age group interacted with two systems. The 65+ age group is the only age group that one system interaction was not the highest proportion for decedents, with 25% interacting with only one system and 45% of 65+ decedents interacting with two systems.

In the 25-34 age group, no interaction, interaction with two systems, and interaction with three systems were relatively comparable (20%, 22%, and 18% respectively), with 40% of decedents in this age group interacting with one system. This age group had the highest proportion of decedents found in all three systems (18%). An increase in the percent of decedents found in two systems begins in the 35-44 age group and remains throughout the rest of the age groups. While use of one system in the 35-44 age group is still the highest proportion (35%) of that age group, the percent of the 35-44 age group that interacted with two health systems is comparable (34%). In general, the 45-54 age group and the 55-64 age group were comparable.

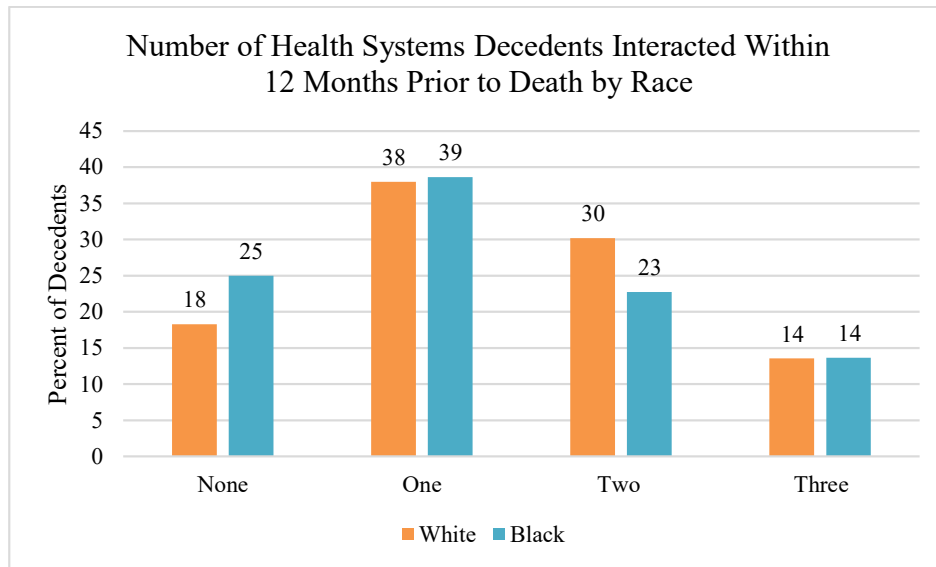
Figure 3



4.3.3 Race: Healthcare Systems and Risk Factors

Black decedents were more likely not to interact with any of the healthcare systems (25%) compared to white decedents (18%). Black decedents were also less likely to have interacted with two health systems (23%), compared to white decedents (30%). Interaction with one system and all three systems were comparable for both races.

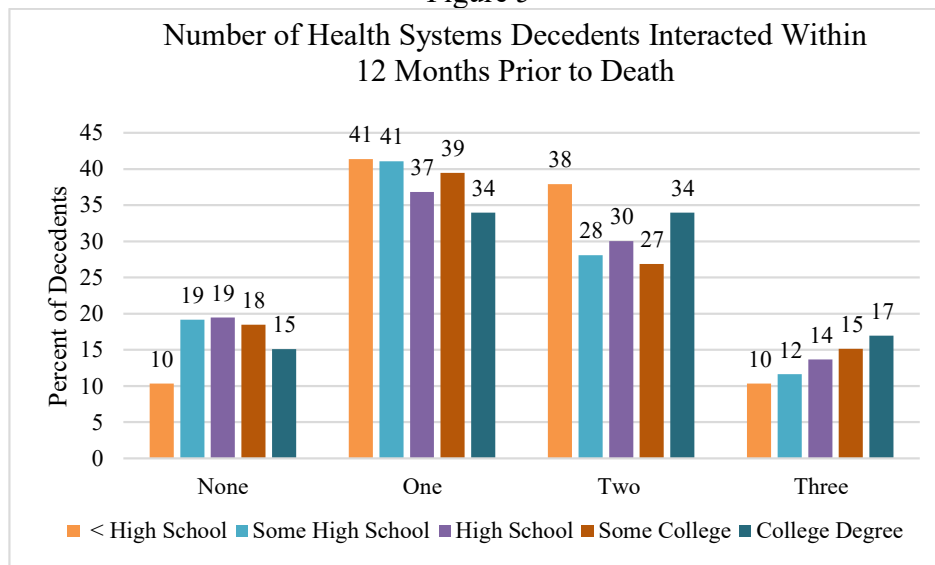
Figure 4



4.3.4 Educational Status: Healthcare Systems and Risk Factors

There was a slight increase in usage of all three systems with greater educational achievement: 10% in less than high school educated decedents, 12% in some high school, 15% in some college, and 17% in college degree. Decedents with less than a high school education were most likely to interact with one or more systems (90%), followed by decedents with a college education (85%). Decedents with less than a high school education or a college degree were also the two education levels with the largest proportion of decedents in two systems.

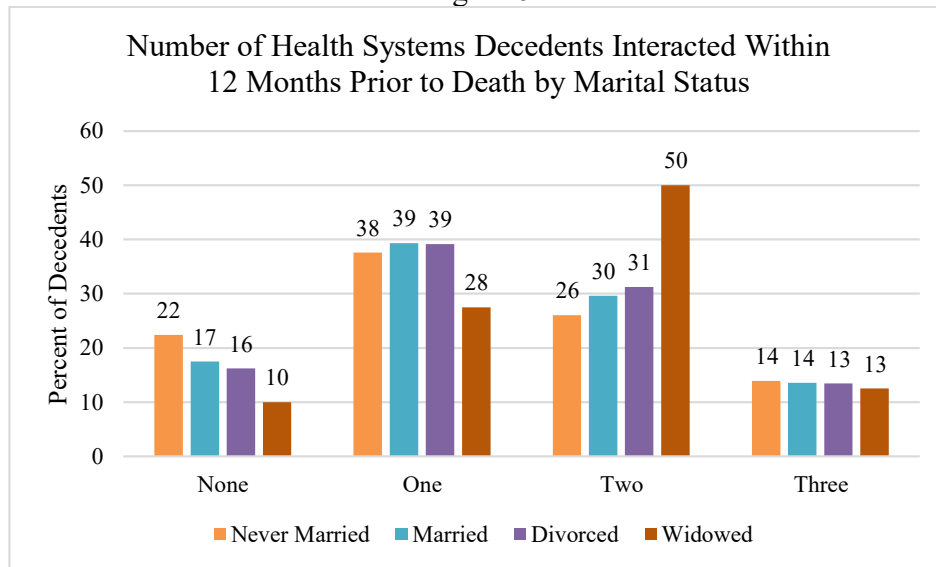
Figure 5



4.3.5 Marital Status: Healthcare Systems and Risk Factors

Never married decedents were more likely not to interact with any of the health systems (22%). Only 10% of widowed decedents did not interact with any health system.

Figure 6

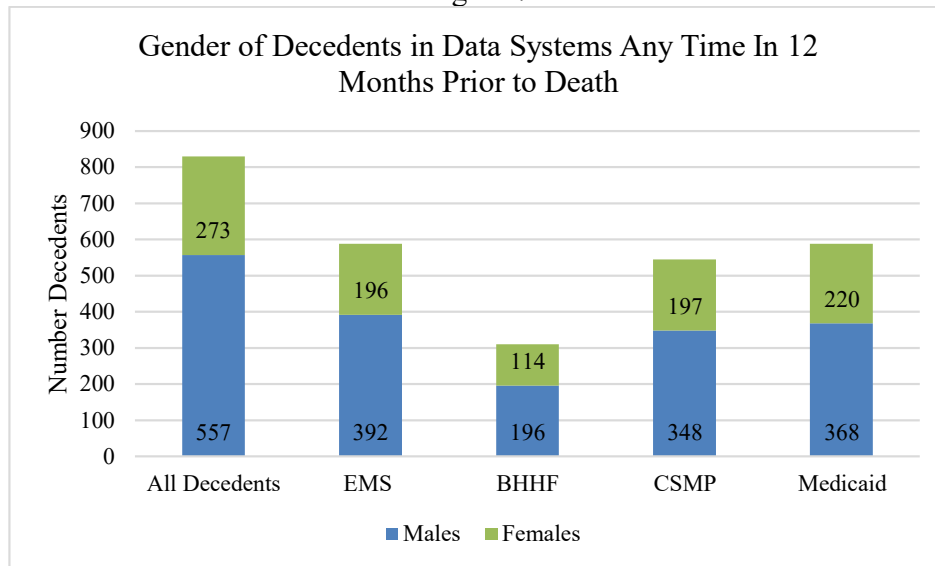


4.4 Gender: Overview

This analysis includes 830 West Virginia residents who died from a drug overdose between January 1 to December 31, 2016. Overall, males died of an overdose disproportionately in relation to the gender makeup of the state. Of the decedents, 67% were male and 33% female. Figure 7 represents the number of male and female decedents within each of the data sets that decedents interacted within the 12 months prior to their death, as reported on the death record. Even though males are more likely overall to die from a drug overdose, it is important to understand how males and females may interact differently within the different health systems. To better understand these differences, gender was analyzed within each data set.

Overall, BBHMF interacted with the least number of decedents (310) in the 12 months prior to death. This was followed by the CSMP (545), and both Medicaid and EMS with 588 decedents. The WVDOC interacted with 464 of the decedents at some point during their life. The BBHMF data suggests that decedents may have engaged BBHMF at higher rates in other years prior to their death. EMS had the largest representation of men, with 392 of the 557 male decedents. In contrast to men, women were represented more frequently in the Medicaid population, with 220 of the 273 female decedents.

Figure 7



4.4.1 Gender: Controlled Substance Monitoring Program

Of the 830 decedents, 759 (91% - **Error! Reference source not found.**) ever interacted with the CSMP. Of male decedents, 91% had a documented prescription history for a controlled substance, as compared to 93% of female decedents.

Figure 8 summarizes interactions with the CSMP at point in time intervals before death by gender compared to the decedents overall CSMP history. Female decedents with a CSMP history were more likely to fill controlled substance prescriptions than their male counterparts in the 12 months prior to their death. Approximately 69% of male decedents filled a prescription for a controlled substance within 12 months of death, and 39% filled a prescription within 30 days of death. Similarly, 78% of females filled a prescription for a controlled substance within 12 months of death, and over half (53%) of the female decedents that had ever had a CSMP history had a prescription within 30 days of death. Future studies should assess the continuity of dispensed prescriptions in the 12 months prior to death to assess whether there is continued and chronic use of prescription medications.

Figure 8

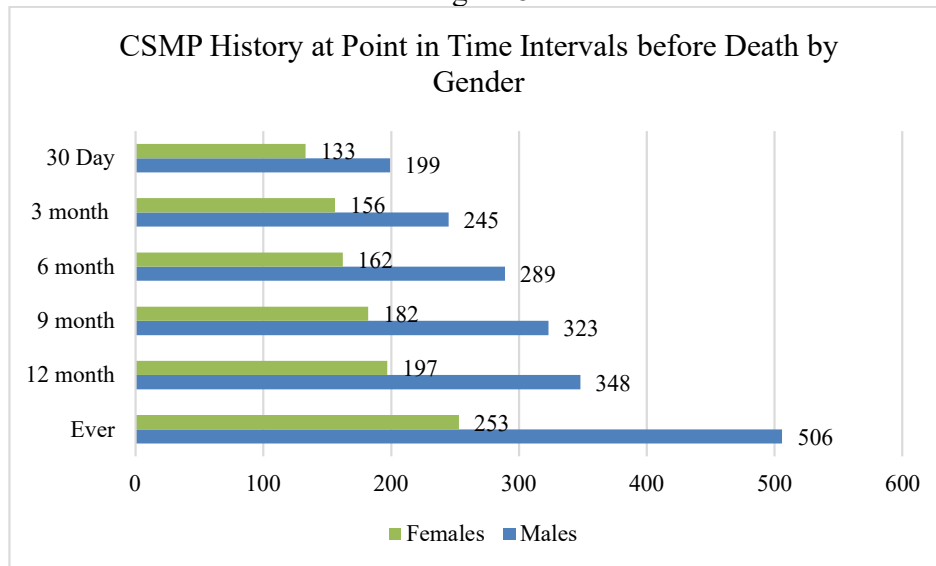
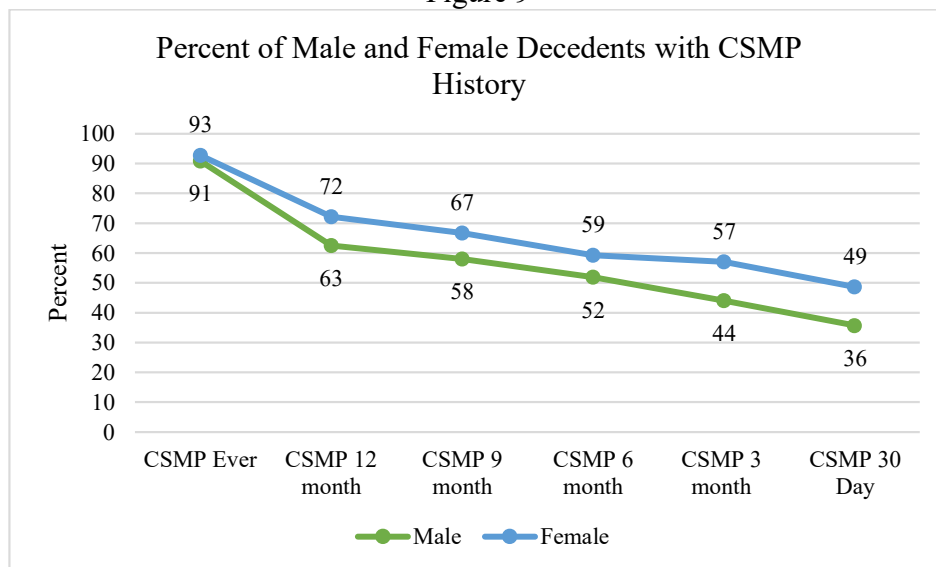


Figure 9 illustrates how female decedents with a CSMP history are more likely to fill controlled substance prescriptions than their male counterparts in the 12 months prior to their death. This pattern continued and was slightly more marked at three months and 30 days. Nearly half (49%) of female decedents filled a prescription within 30 days of death, and over a third (36%) of male decedents filled a prescription within 30 days.

Figure 9

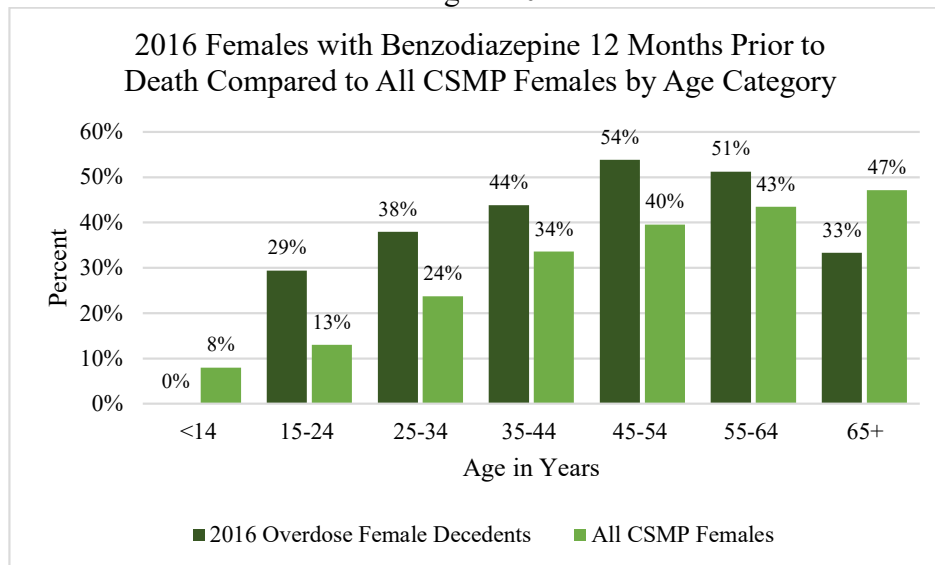


Female decedents were more likely to have filled a prescription for a benzodiazepine compared to both males overall and other females with a CSMP history. In this report, 45% (124) of all female decedents (273) filled a prescription for a benzodiazepine in the 12

months prior to their death. The proportion of females was even higher (63%) for females with a prescription history in the CSMP. Only 35% of all females with a prescription history in the CSMP filled a prescription for a benzodiazepine.

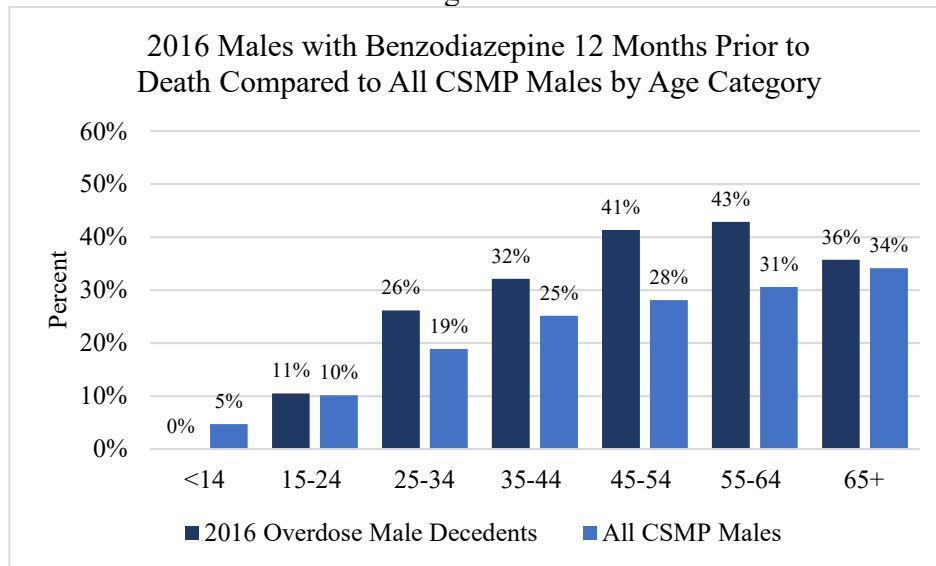
A greater proportion of female decedents had a benzodiazepine prescription compared to all females in the CSMP in the same age group for 2016, in all but the 65+ age group (Figure 10). The difference was greater at younger ages. However, over 50% of 45-54 and 55-64 female decedents had filled a benzodiazepine prescription in the 12 months prior to death. As a group, female decedents were more likely to have filled a benzodiazepine prescription in the 12 months prior to death than all females in the CSMP for 2016.

Figure 10



Overall, males were also more likely to have filled a benzodiazepine prescription in the 12 months prior to death compared to males in the CSMP in 2016. However, both the youngest group and the oldest group of male decedents filled a benzodiazepine prescription comparable to other West Virginia males in their respective age groups. Like females, the percent of both male decedents and males in general in the CSMP increased with age. The 55-64 age group had the highest percentage (43%) of decedents with a benzodiazepine prescription in the 12 months prior to death; this was also true for the overall CSMP population (31%).

Figure 11



According to death records, females (90%) were more likely than males (84%) to have had more than one drug in their system at the time of death. Figure 12 illustrates the number of drugs present for males. Men were more likely (31%) to have two drugs identified at their time of death. As the number of drugs involved in the overdose death increased, there was a corresponding decrease in the percent of males. In contrast, 27% of female decedents (Figure 13) had two drugs identified at time of death and 29% had three drugs.

Figure 12

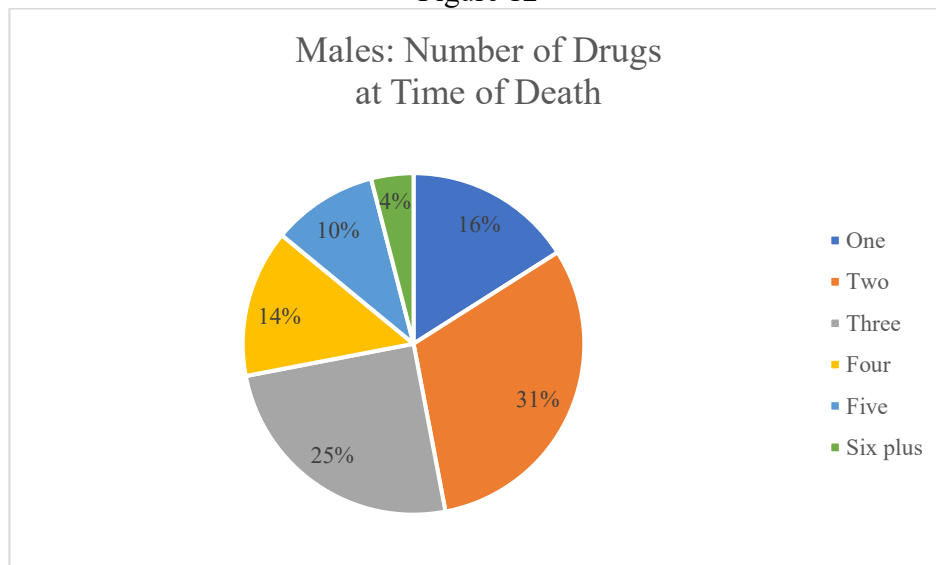
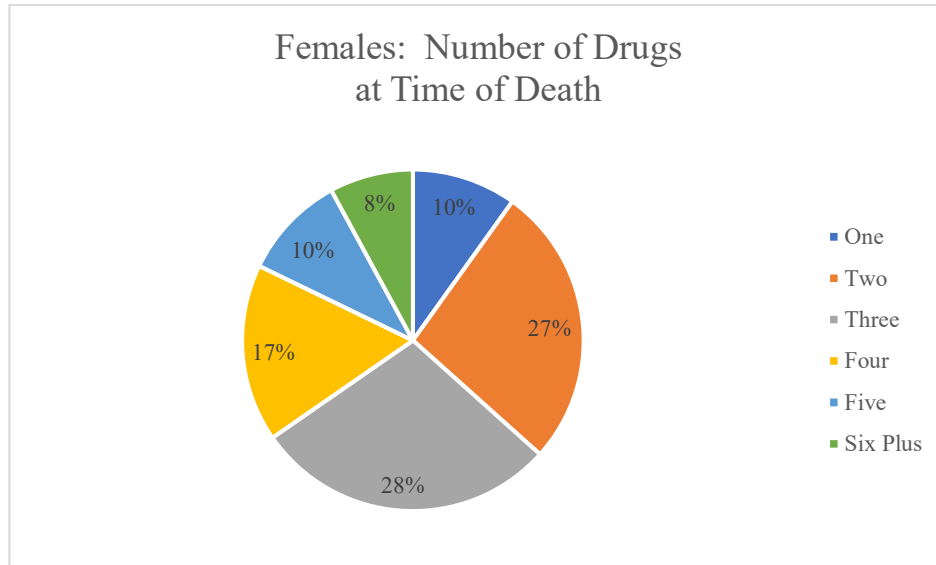


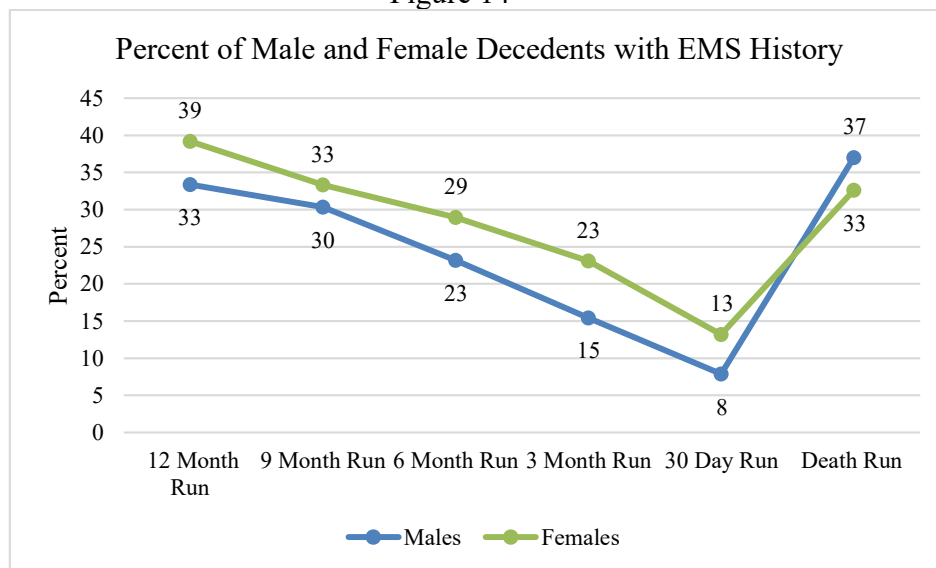
Figure 13



4.4.2 Gender: Emergency Medical Services

In the 12 months to 30 days prior to death, females were more likely to have utilized EMS. However, males were more likely to interact with the service at time of death. In fact, a higher percentage of male decedents had an EMS contact within 48 hours of death (37%) than during the 12 months prior to death (33% - Figure 14).

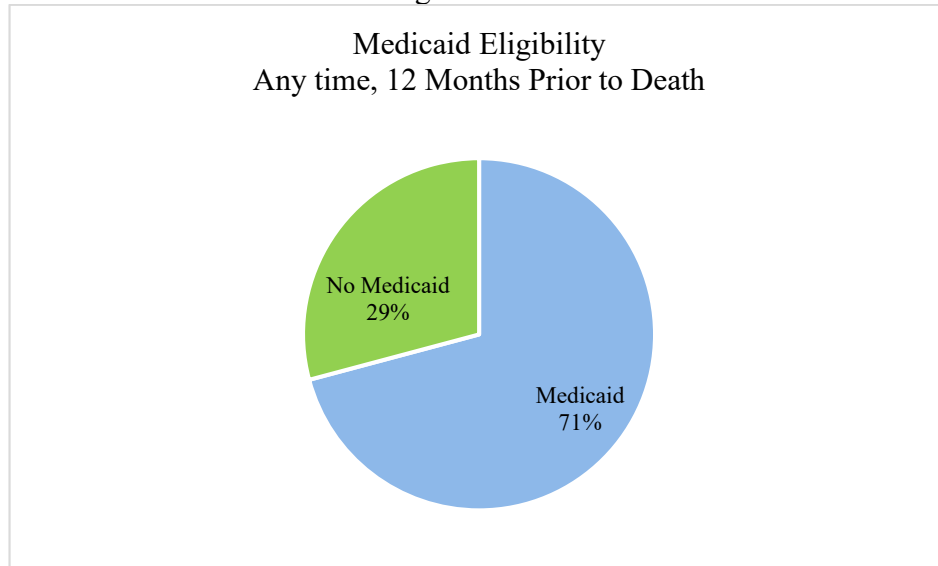
Figure 14



4.4.3 Gender Medicaid

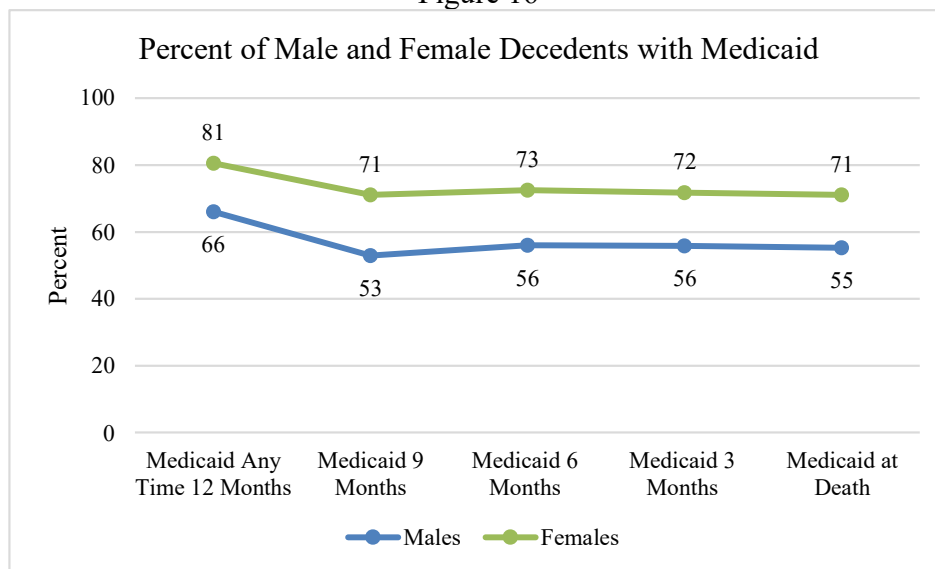
Figure 15 shows that overall, 71% of decedents were eligible for Medicaid at some point in the 12 months prior to their death.

Figure 15



Female decedents were more likely to have had Medicaid at any time during the 12 months prior to death (81%) compared to male decedents (66%). The majority of adult Medicaid members (63%) were male. Females were more likely to have Pregnant/Parent/Caregiver Medicaid (21% of Medicaid eligible females) compared to males (7% of Medicaid eligible males) (Figure 16).

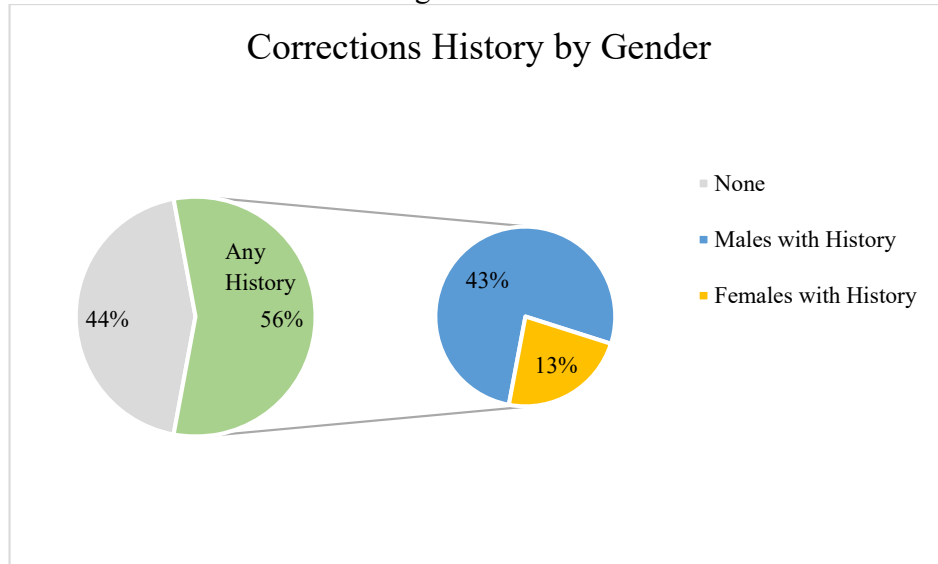
Figure 16



4.4.4 Gender: Corrections

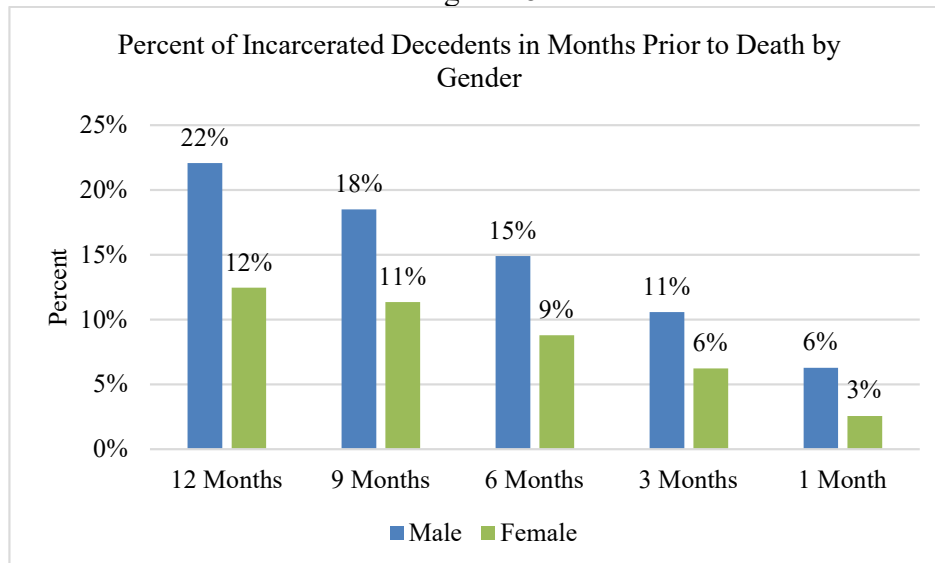
Of the 830 decedents, 464 (56%) were ever incarcerated in a state-funded correctional facility (including regional jails), 43% of male decedents and 13% of female decedents (Figure 17).

Figure 17



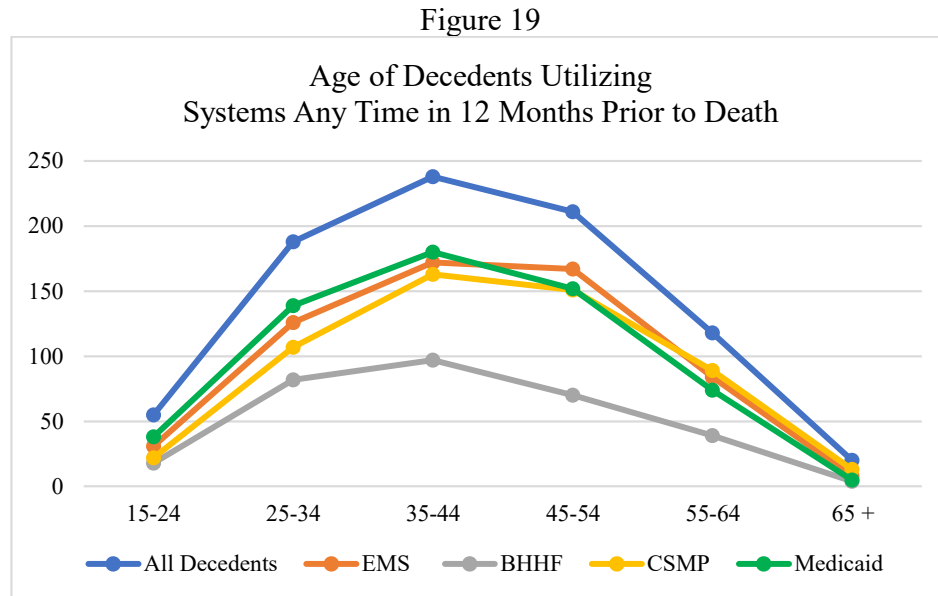
Of male decedents that were incarcerated within 12 months of death, 28% died within a month after release. Approximately, 21% of females with an incarceration history in the 12 months prior to death died within 30 days of release.

Figure 18



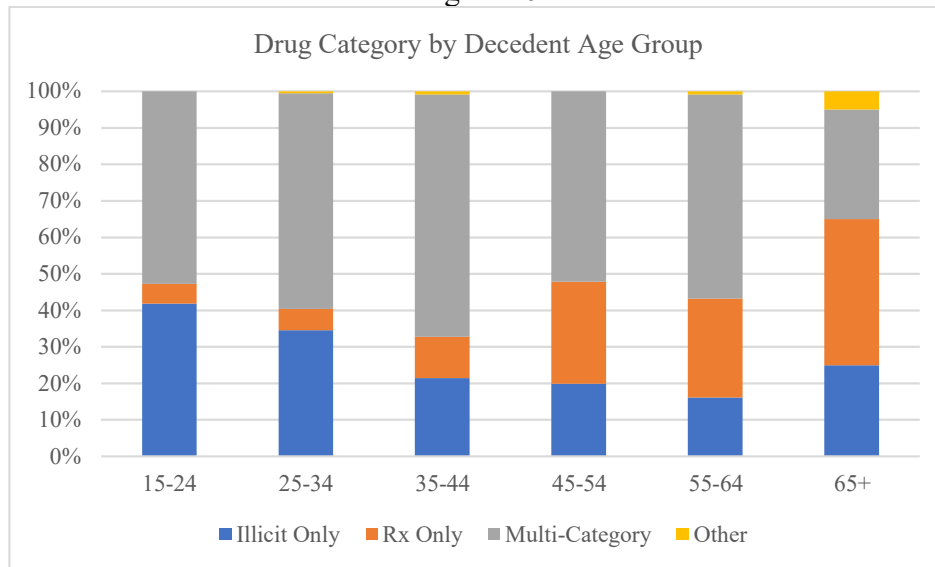
4.5 Age: Overview

The average age at death from a drug overdose was 42 years, as compared to 72 years for the overall West Virginia population that died in 2016. There was no difference between males and females for the average age at death from overdose. Overdose decedents ranged in age from 17 to 88 years. The figure below represents the age of decedents at their time of death within each of the data sets.



Multiple drug types were the most common cause of fatal overdose for decedents ages 15-64 years. Illicit drugs are more common in decedents 15-44 years. Prescription drugs are more likely to be part of a fatal overdose in decedents 45 years and older. Figure 20 shows the drug categories by age as reported on the death record have been grouped by Illicit only, Rx only, Non-Prescribed, and Multi-Category.

Figure 20



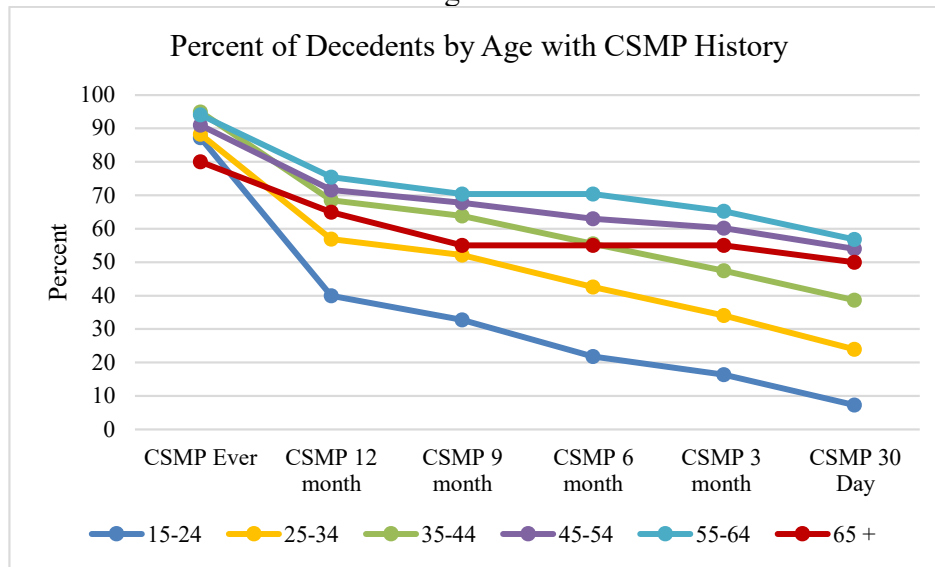
4.5.1 Age: Controlled Substance Monitoring Program

Decedents 65 years and older are less likely to have ever filled a controlled substance prescription (80%), compared to 91% of all decedents. At 12 months prior to death, decedents in the 15-24 age group were less likely to have filled a prescription than other age groups with 40% of this age group having filled a prescription at 12 months prior to death compared to 66% of all decedents.

In contrast, 75% of 55-64 year-old decedents had filled a prescription within 12 months of death. The three oldest age groups (45-54, 55-64, and 65+), had a comparatively less decrease of dispensed prescriptions from 12 months to 30 days prior to death (72% to 54%, 75% to 57%, and 65% to 50% respectively). However, the three youngest groups showed consistent decreases throughout the 12 months prior to death. The 15-24 year-old group decreased from 40% to 7%, 25-34 year-old decreased from 57% to 24%, and the 35-44 year-old decreased from 69% to 39%.

In general, there was a larger decrease from three months to 30 days in all age groups than other consecutive time periods. Future studies should explore whether decedents were dropping out of healthcare systems closer to death, or if decedents were still interacting with healthcare systems but less likely to fill a prescription.

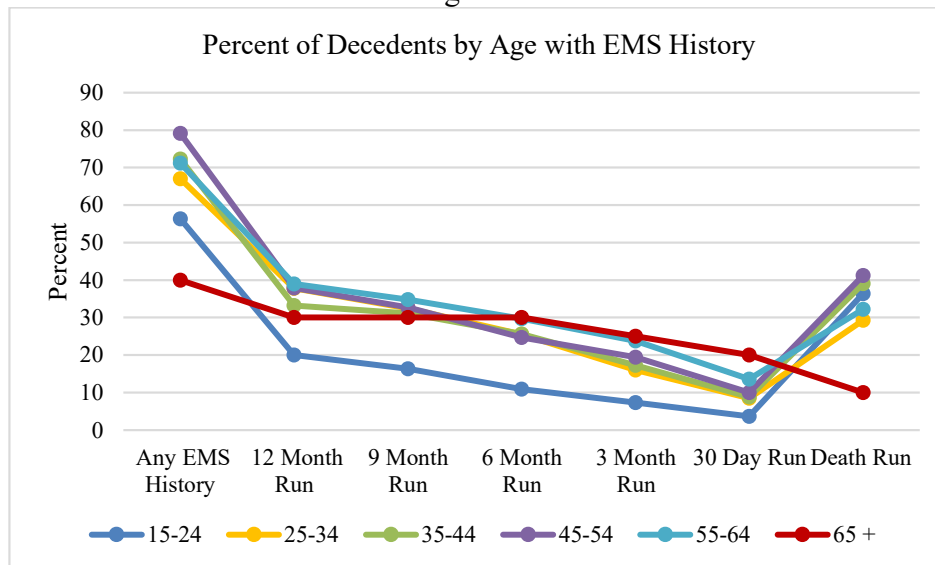
Figure 21



4.5.2 Age: Emergency Medical Services

While decedents 15-24 years were less likely to use EMS overall, most age categories utilized services in a similar pattern in the 12 months prior to death. Adults 65 years and older were less likely to use EMS near time of death. Any EMS history refers to any run that occurred within the 12 months prior to death including a death run.

Figure 22

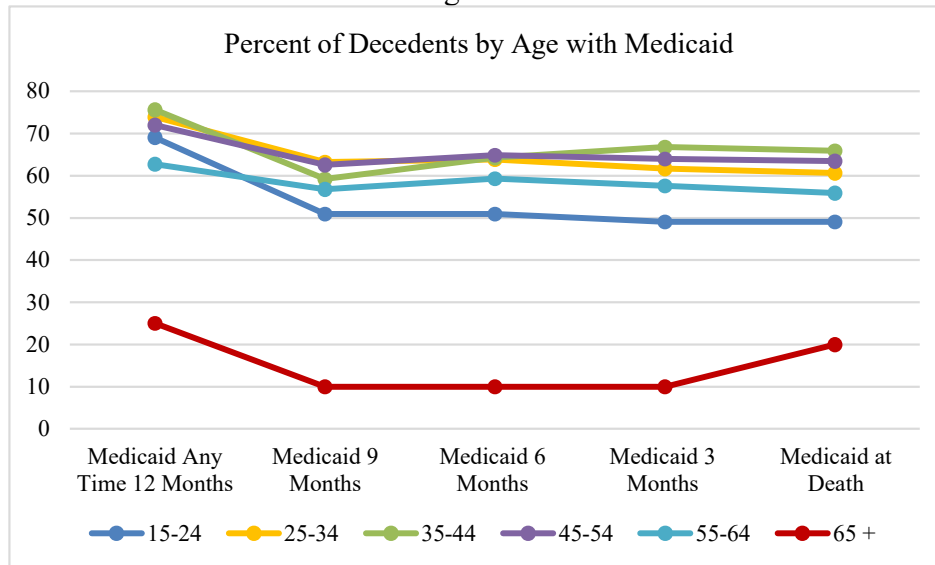


4.5.3 Age: Medicaid

Decedents 65 years or older were significantly less likely to have Medicaid than any other age group. This was likely a factor of Medicare eligibility. Decedents 15-24 years also had lower rates of Medicaid eligibility. This difference may be because this age group could still be eligible for their parents' insurance. Some decedents lacked continuous Medicaid

coverage throughout the 12 months prior to death. Overall 67% of decedents remained on Medicaid throughout the entire period.

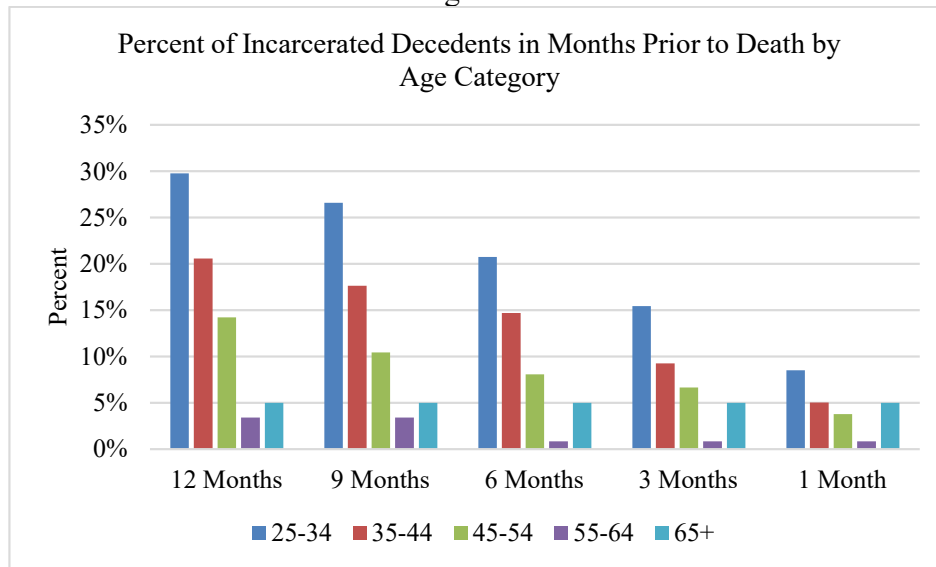
Figure 23



4.5.4 Age: Corrections

Male decedents with a history of incarceration were more likely to be between the ages of 25-44. Over half of the 25-34 year-old male decedents had a corrections history. In the youngest age group, 15-24, 38% of males had a corrections history, until age 65, which had no females with a corrections history. Within the 12 months prior to death, the 15-34 age group was incarcerated at the highest rate. Due to low numbers in the 65+ group, caution is needed when interpreting the graph. The 55-64 age group was the group that were incarcerated at the lowest rate. Of those decedents with a history of incarceration within 12 months of death, 29% of the 25-34 age group died within 30 days of release. The other age groups are slightly less, but relatively comparable with rates varying between 24% and 27%.

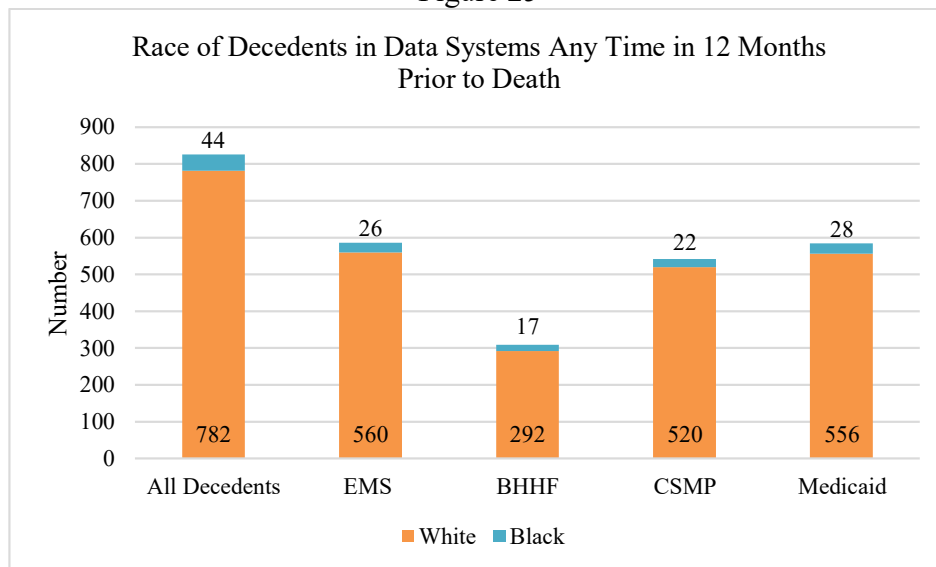
Figure 24



4.6 Race: Overview

Of West Virginia overdose deaths, 95% of decedents were white, while 5% of decedents were black. The percentage of black men was nearly twice as high (6%) as expected from the overall population (3%). The category of Other was too small for analysis. The figure below presents the race of 2016 overdose decedents.

Figure 25



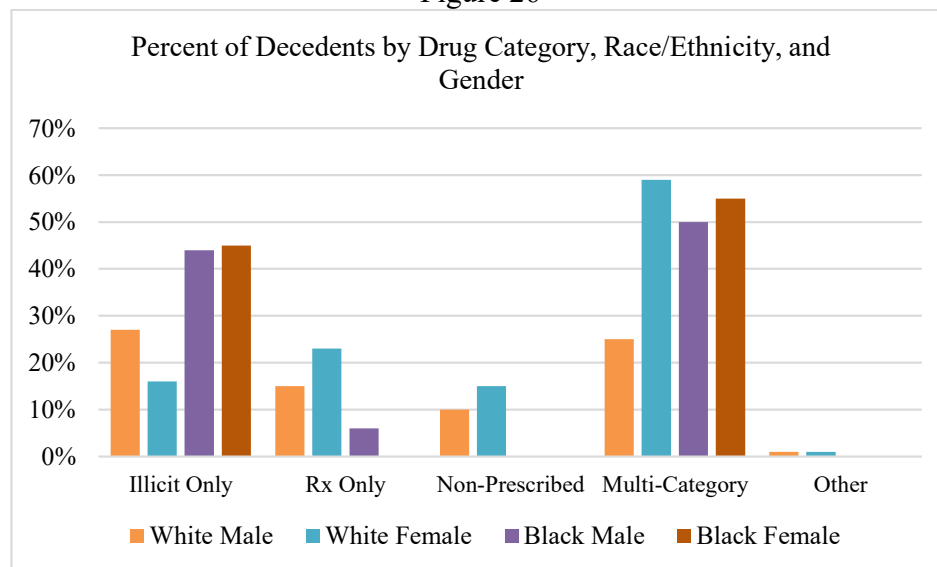
According to data from death records, black decedents were more likely to use illicit substances at their time of death, while white decedents were more likely to use prescription drugs. Figure 26 shows the category of substances reported on the death record.

Illicit drugs were found in over 50% of each decedent group. Approximately, 74% of white male decedents had an illicit substance at death, followed by 54% of white females. Of black males, 91% had an illicit substance at death, and 100% of black female decedents had an illicit substance at death.

A different pattern was found for prescription medications, which included both prescribed and diverted prescriptions. Nearly 80% of white female decedents had a prescription medication in the toxicology report at death, which was followed by white men at 63%. Less than 50% of both black male and female decedents had prescription drugs at time of death, 47% and 45% respectively.

Polypharmacy is common, and decedents could be represented in both the illicit and prescription category. However, the same patterns emerge when looking at decedents that died of illicit only drugs and prescription only drugs. Over half (55%) of black female decedents had only an illicit substance at death, as compared to 20% of white female decedents. In contrast, 44% of white female decedents had only prescription medications at death while no black female decedents had only prescription medications at death. Over half of black male decedents (53%) had only illicit substances at time of death, as compared to 36% of white males. Both black and white male decedent deaths were less likely to be associated with prescription medications only.

Figure 26

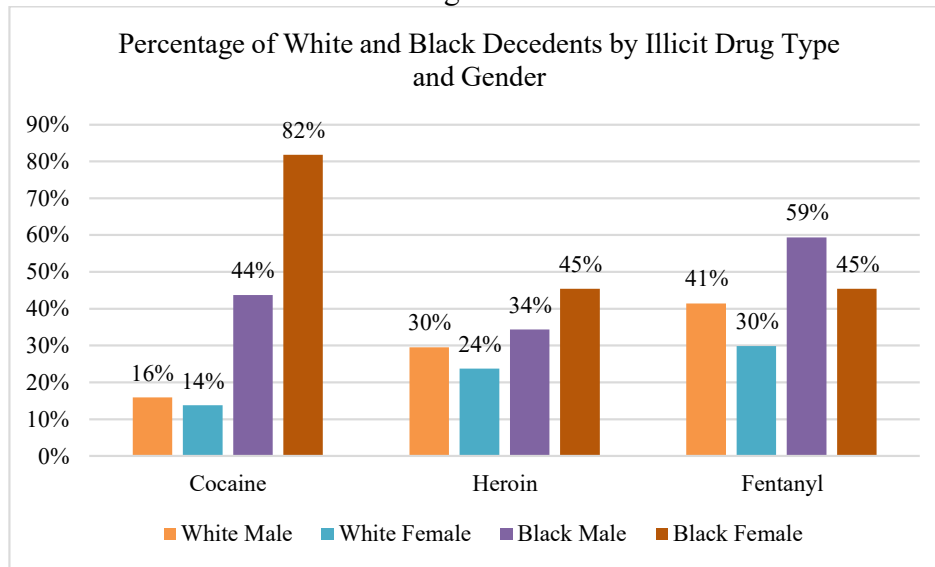


While both races used cocaine, heroin, and fentanyl, black females were much more likely to use cocaine (82%) as compared to white females (14%). Black males were also much more likely to use cocaine (44%) as compared to white males (16%). The presence of stimulants at death is starting to increase rapidly both within West Virginia and nationally.

Heroin and fentanyl were found in equal rates in black female decedents, 45%. The presence of fentanyl was greater than heroin in all other groups. Heroin was found in 30%

of white male decedents, while fentanyl was present in 41%. In white female decedents, heroin was present in 24% of decedent deaths, while fentanyl was present in 30% of decedent deaths. In black male decedents, heroin was present in 34% of deaths, and fentanyl was found in 59% of overdose deaths in this group. Fentanyl contributed to more deaths than heroin.

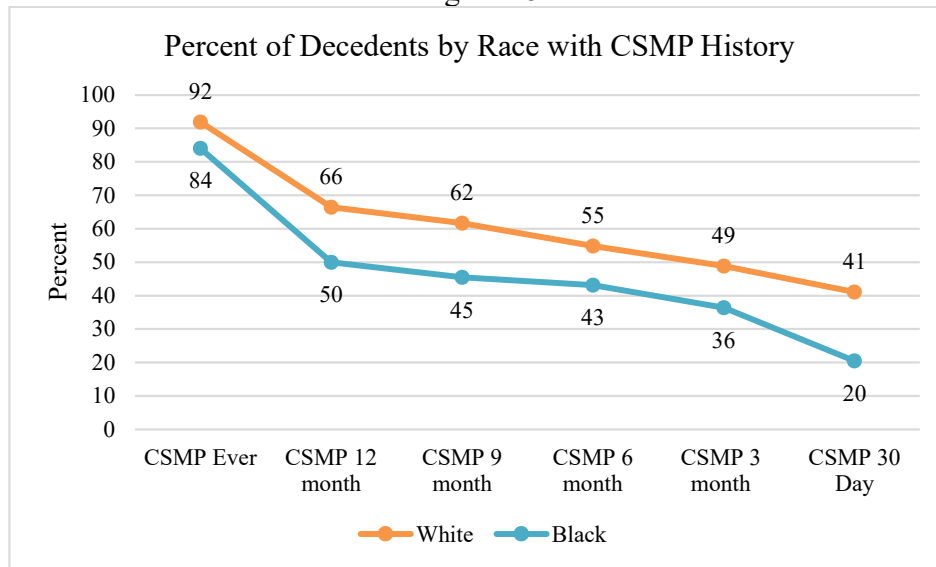
Figure 27



4.6.1 Race: Controlled Substance Monitoring Program

Black decedents are less likely to have ever filled a controlled substance prescription (84%) as compared to whites (92%). This difference was even greater at 30 days prior to death with only 21% of black decedents filling a controlled substance prescription as compared to 41% of whites. Approximately 38% of all West Virginians had at least one controlled substance prescription at some point in 2016. While both black and white decedents have a higher than expected rate of prescriptions in the 12 months prior to death, this was more evident in white decedents.

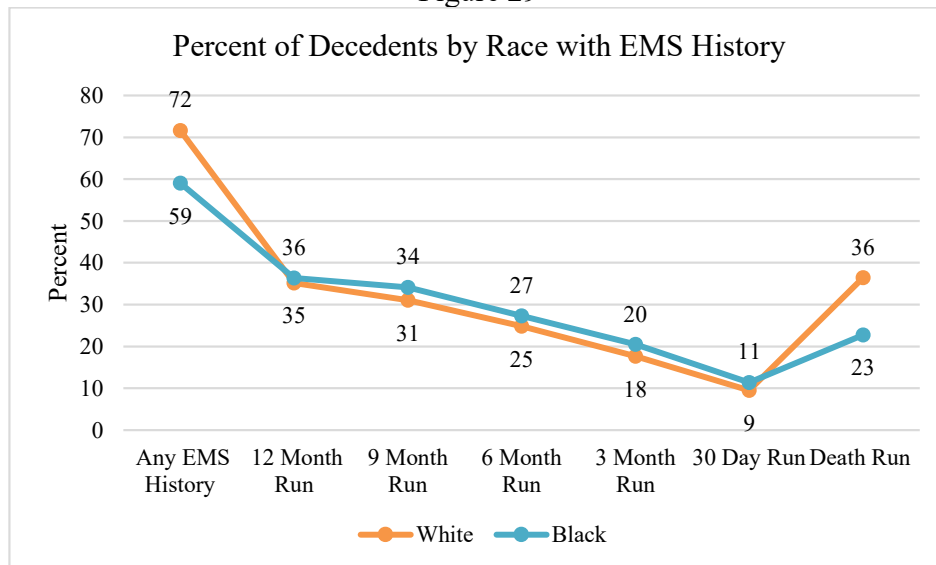
Figure 28



4.6.2 Race: Emergency Medical Services

Both black and white decedents used EMS in a similar manner until time of death. At time of death, white decedents (36%) were more likely to use EMS than black decedents (23%). Any EMS history refers to any run that occurred within the 12 months prior to death, including a death run.

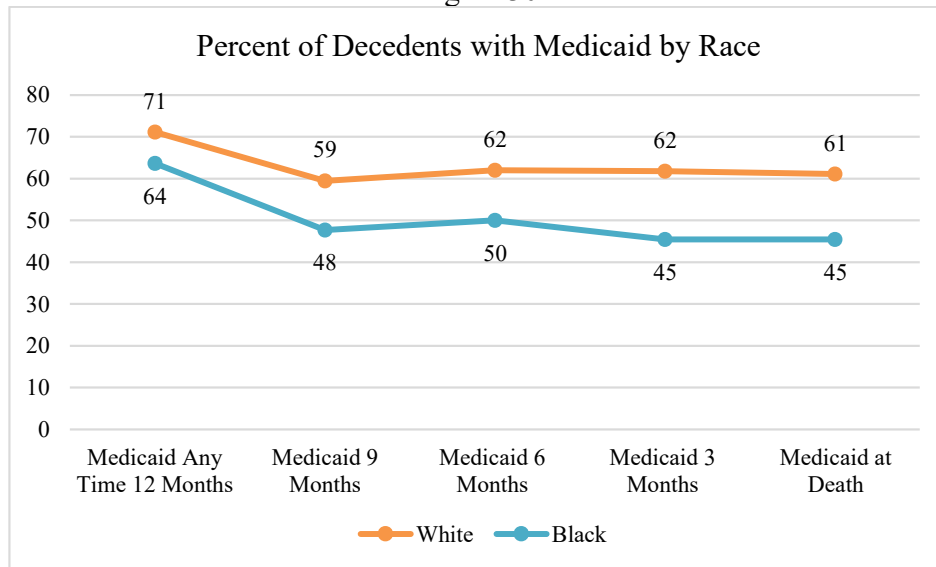
Figure 29



4.6.3 Race: Medicaid

Black decedents were less likely to have Medicaid eligibility than white decedents. Caution is urged in using this variable because the sample size was small, and males are over-represented in this category. In general, a larger proportion of females were Medicaid eligible than males.

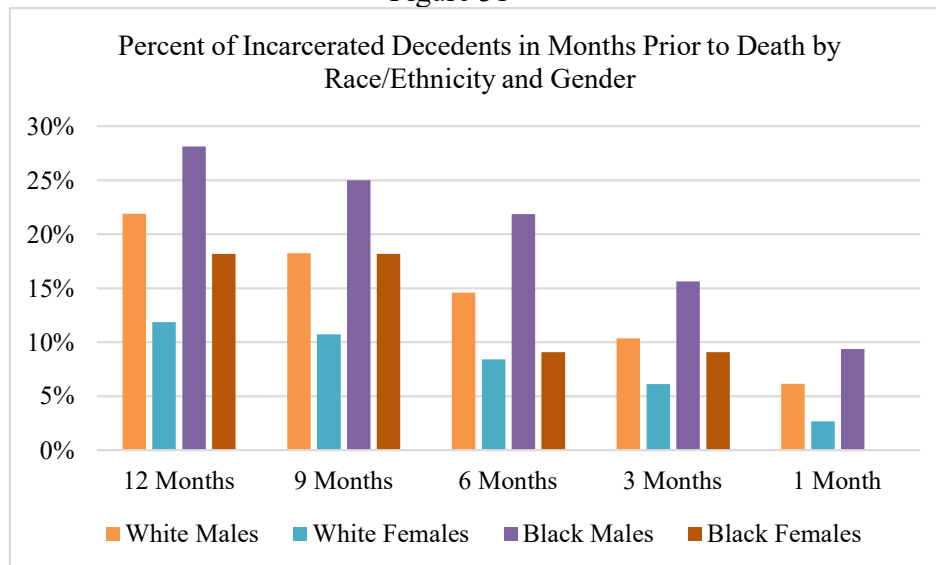
Figure 30



4.6.4 Race: Corrections

The rate of incarceration for black decedents was more than twice the rate that would be expected based on population demographics. However, for 2016, black males made up 11% (not including regional jails) of inmates in West Virginia. Yet, black male decedents only made up 6% of the decedents that had been incarcerated within 12 months of death. Of white male decedents with an incarceration history within 12 months of death, 28% die within 30 days of release, for white female decedents 23% died within 30 days of release. A third of black male decedents with a history of incarceration within 12 months of death died within 30 days of release.

Figure 31

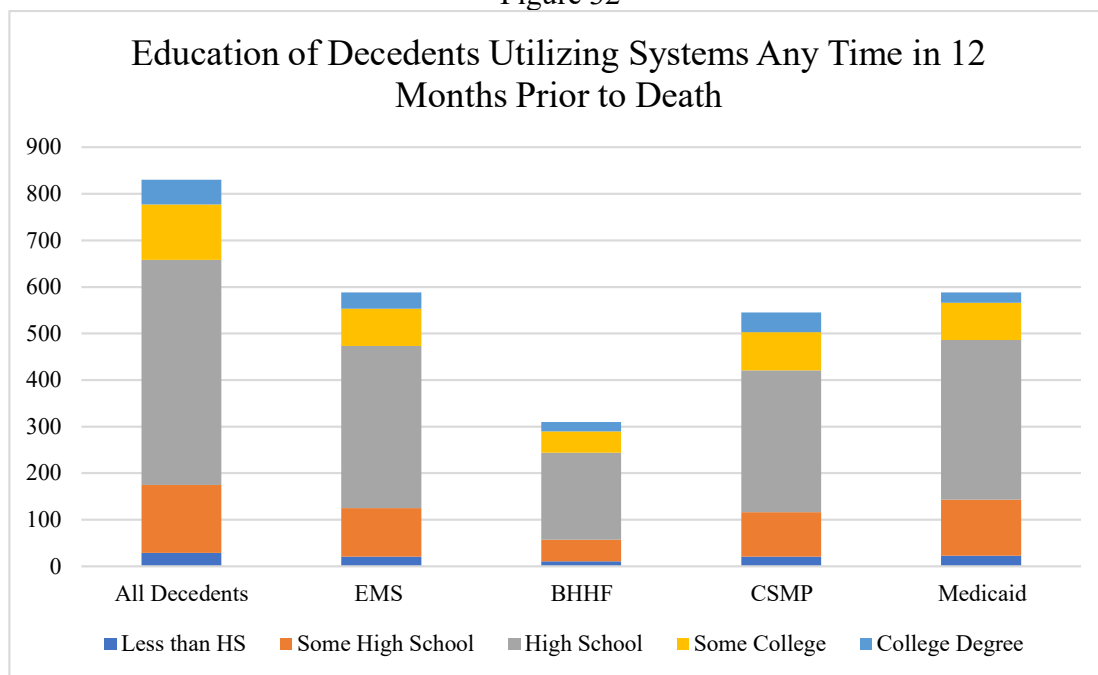


4.7 Educational Status: Overview

Educational status of overdose decedents differs from both the overall population of West Virginia as well as the other West Virginia residents that died in 2016. While overdose decedents tend to be less educated than the overall population (US Census Bureau, 2016b), they were more educated than the overall population that died in 2016. Only 69% of all 2016 West Virginia decedents, regardless of cause of death, completed high school or above, compared to 80% of all overdose decedents.

Females dying from overdose were more likely to have completed some college or attained a college degree (28%) as compared to males (17%). The figure below shows the educational status of the decedents across different healthcare systems, as reported by the death record.

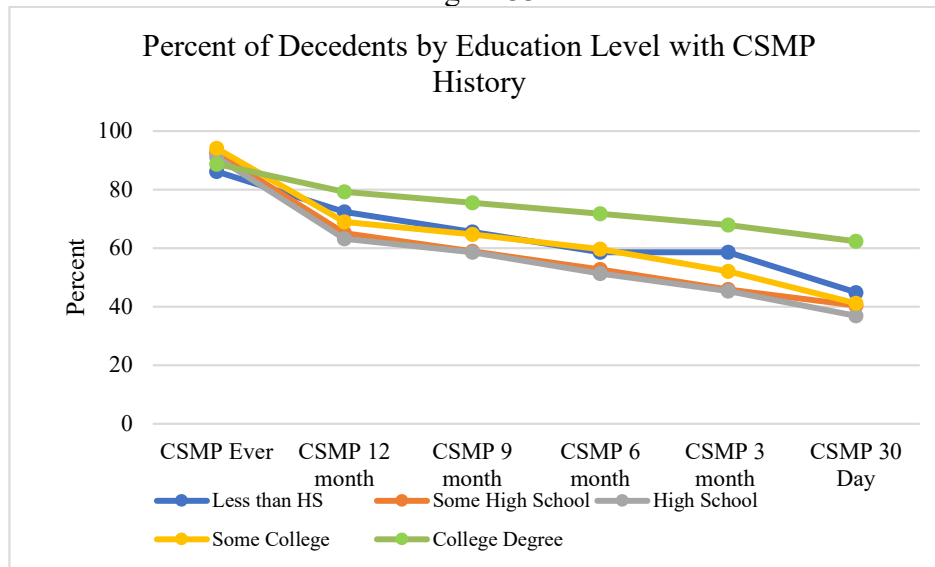
Figure 32



4.7.1 Education: Controlled Substance Monitoring Program

Decedents with a college degree were more likely to have filled a controlled substance prescription in the 12 months prior to death (79%) as compared to the overall population (65%). This difference was maintained throughout the 12 month period prior to death. This is expected since female decedents were more likely to have a prescription in the 12 months prior to death and female decedents in general were better educated. Furthermore, other education levels show greater decreases throughout the 12 months. While this report does not address the continuity of prescriptions throughout the 12 months, it appears individuals with a higher education may have sustained prescriptions throughout the 12 months. This would put these individuals at higher risk of a prescription overdose.

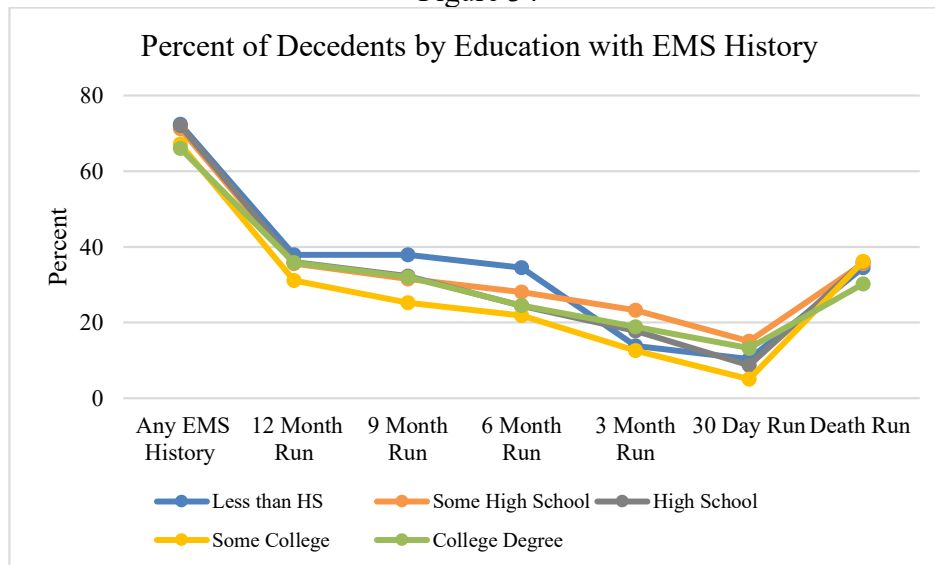
Figure 33



4.7.2 Education: Emergency Medical Services

The pattern of utilization of EMS was consistent across educational groups. Any interventions or efforts put in place via emergency services have the opportunity to reach all education levels. Any EMS history refers to any run that occurred within the 12 months prior to death, including a death run.

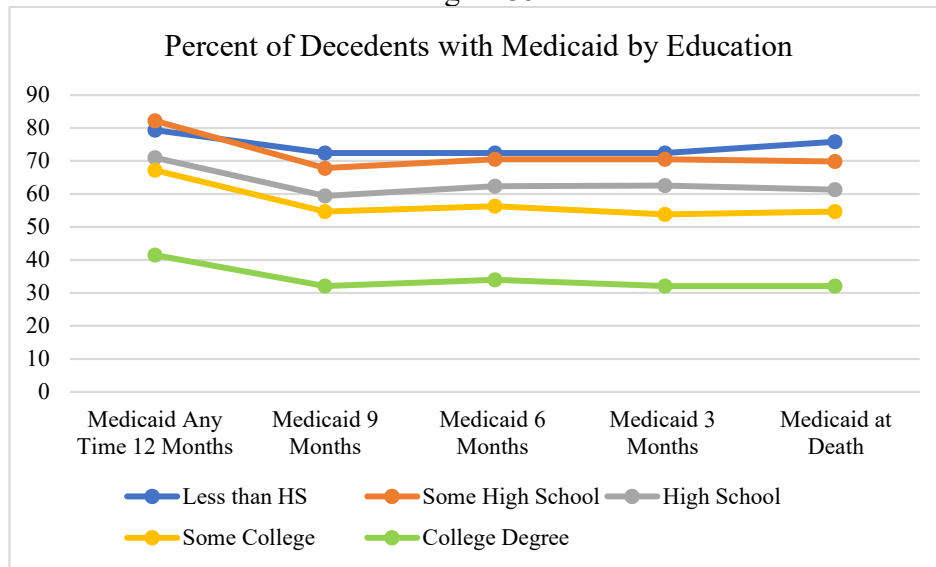
Figure 34



4.7.3 Education: Medicaid

Decedents with less education are more likely to have Medicaid eligibility. Those decedents with a college education were much less likely to have Medicaid. The pattern of education level of decedents with Medicaid follows what is generally expected. Medicaid eligibility was stratified by education level.

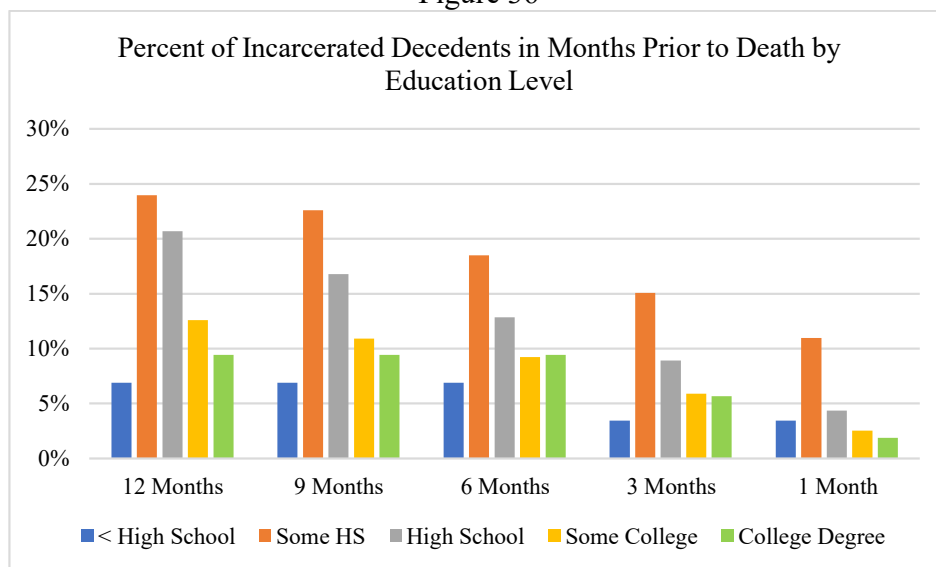
Figure 35



4.7.4 Education: Corrections

A larger proportion of decedents with some high school education were incarcerated during the 12 months prior to death. Up until 30 days prior to death, the decedent group that was least incarcerated were those with less than a high school education. Nearly 46% of the decedents with some high school education that were incarcerated within 12 months of death, died within 30 days of release.

Figure 36

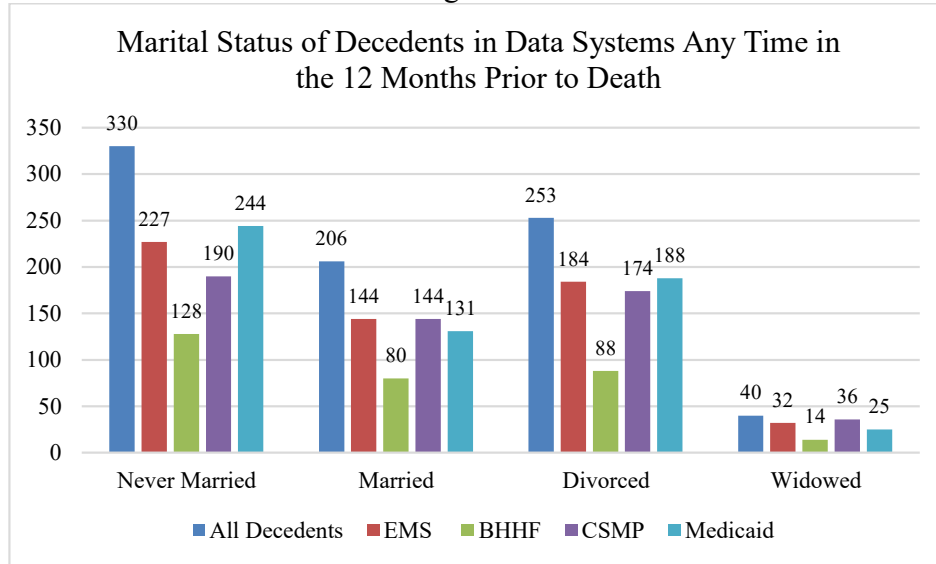


4.8 Marital Status: Overview

Overdose decedents were less likely to be married (25%) as compared to unmarried overdose decedents (75%). Women were more likely to be married (31%) as compared to males (22%). The figure below illustrates the decedents marital status as reported by the death record across

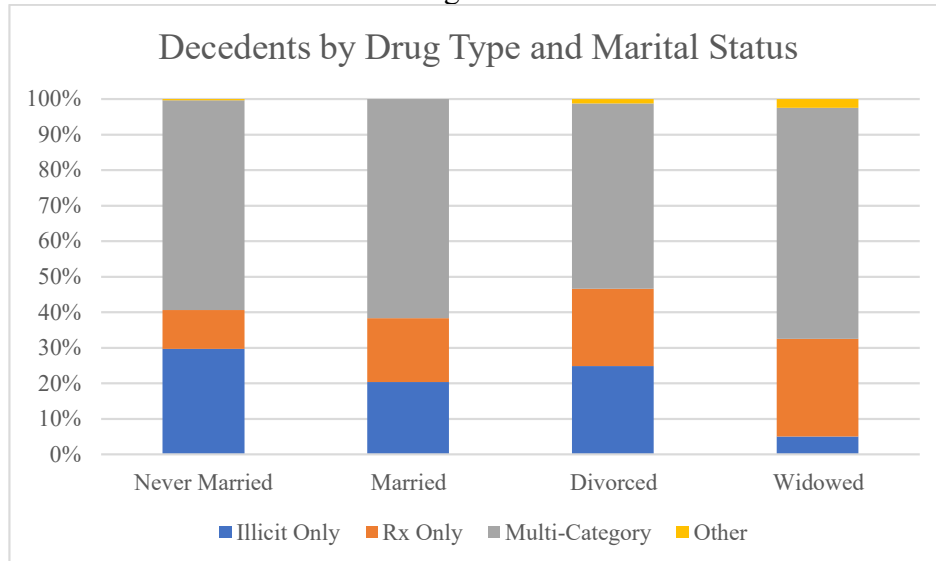
the data systems analyzed. Overall, decedents were more likely to have never married compared to the overall West Virginia population. About 40% of decedents were never married, compared to 31% of males in West Virginia and 24% of females in West Virginia. Conversely, a smaller percent of West Virginia decedents was married (25%) compared to the general population of West Virginia (males: 51%, females: 49%).

Figure 37



Decedents who were never married were most likely to have used an illicit substance during their fatal overdose, widowed decedents were more likely to use prescription drugs.

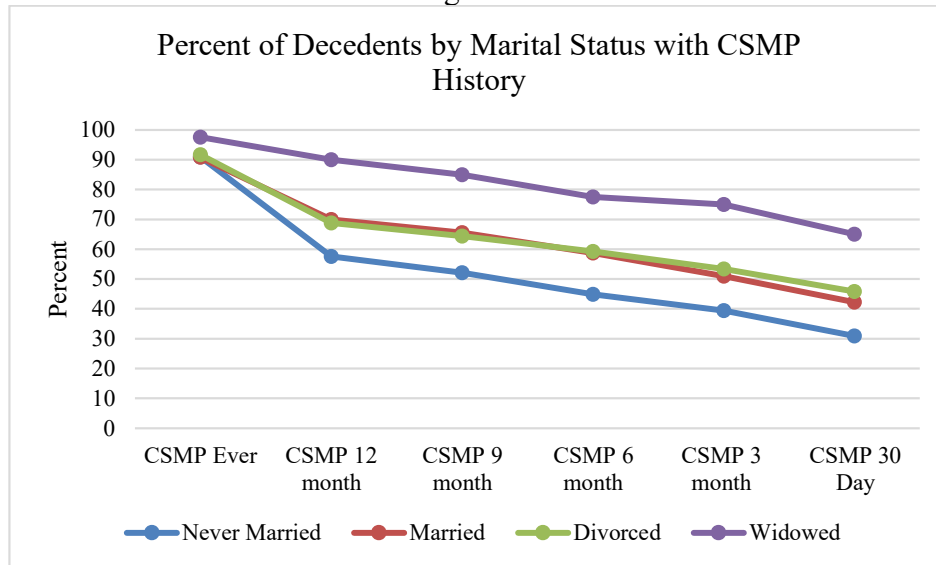
Figure 38



4.8.1 Marital Status: Controlled Substance Monitoring Program: Overview

Widowed decedents were more likely to have filled a controlled substance at 12 months (90%) than other decedents (66%). Decedents who were never married were less likely to have filled a prescription beginning at 12 months with that difference continuing throughout the 12 months before death. Decedents who were never married were less likely to have filled a prescription beginning at 12 months with this difference continuing throughout the 12 months before death. This could be an artifact of age; the two youngest age groups had a greater portion of never married.

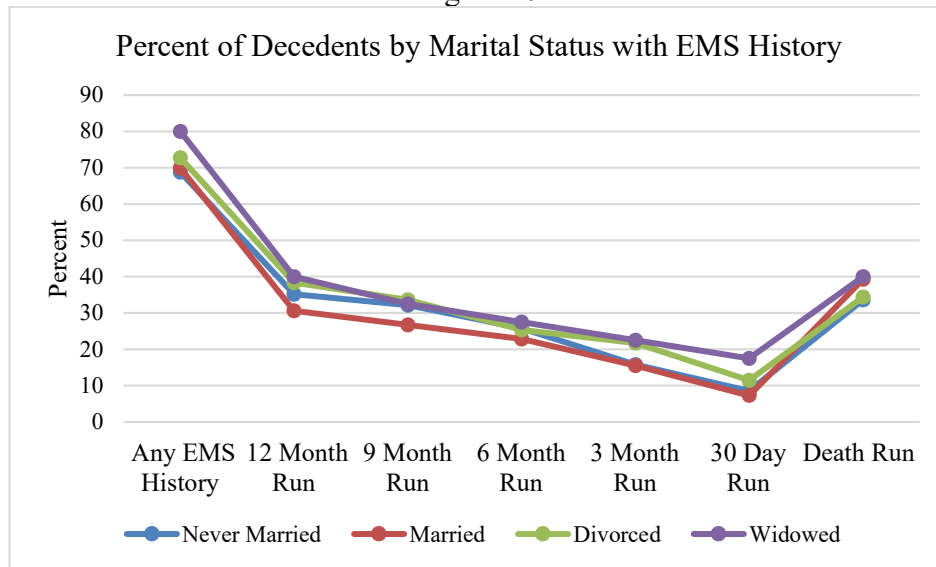
Figure 39



4.8.2 Marital Status: Emergency Medical Services

The pattern of utilization of EMS was consistent across marital status. Any EMS history refers to any run that occurred within the 12 months prior to death, including a death run.

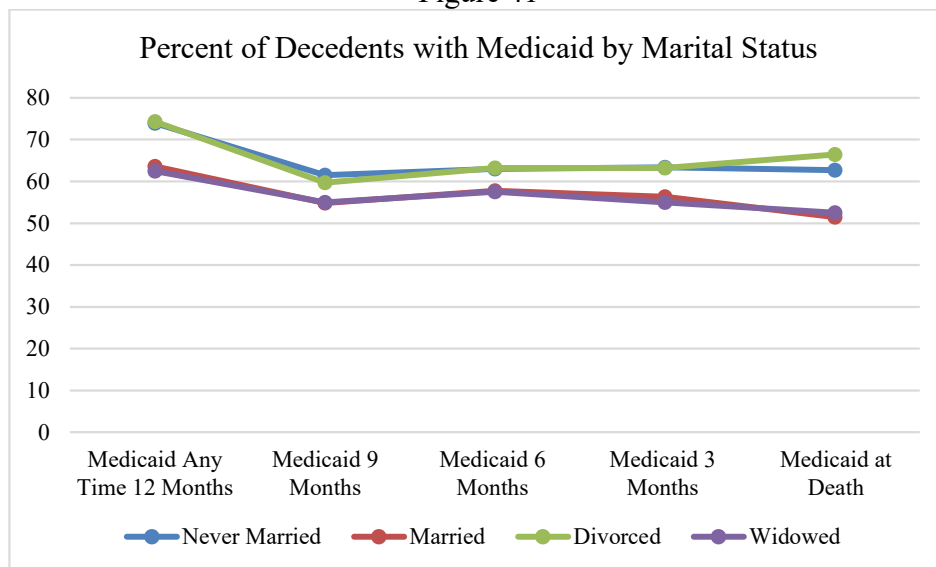
Figure 40



4.8.3 Marital Status: Medicaid

Decedents who were never married or divorced were more likely to have Medicaid than those decedents who were married or widowed.

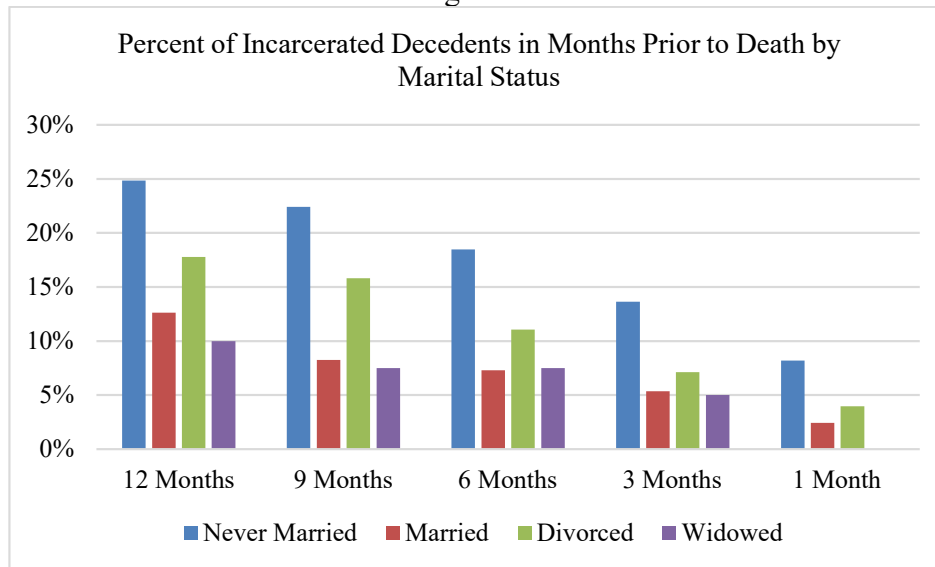
Figure 41



4.8.4 Marital Status: Corrections

Decedents with a history of incarceration are more likely to have never married or be divorced. Approximately one third of never married decedents who were incarcerated within 12 months of death, died within 30 days of release.

Figure 42



4.9 Other Death Record Findings

4.9.1 Other Death Record Findings: Drugs Contributing to Death

Illicit drugs contributed to more overdose deaths in each age group except for the 55-64 year age group. This was most apparent in the 15-44 age groups. Heroin was found in 47% of 15-24 decedents, and fentanyl was found in 45% of this age group. In the 25-34 age group, fentanyl was found in nearly half of all overdoses (49%); heroin was found in 39% of the decedents in this age group. Fentanyl continued to contribute to the largest percent of overdose deaths (47%) in the 35-44 age group, followed by heroin (36%). There was a decrease in heroin and fentanyl involved deaths in the 45-64 age group (heroin: 19% and 6%, fentanyl: 26% and 24%, respective to age group), with an increase in the 65+ group (heroin: 20%, fentanyl: 35%). Cocaine was relatively comparable across age groups. Methamphetamine was also comparable except for the 65+ age group, no decedents in this age group had methamphetamine at death.

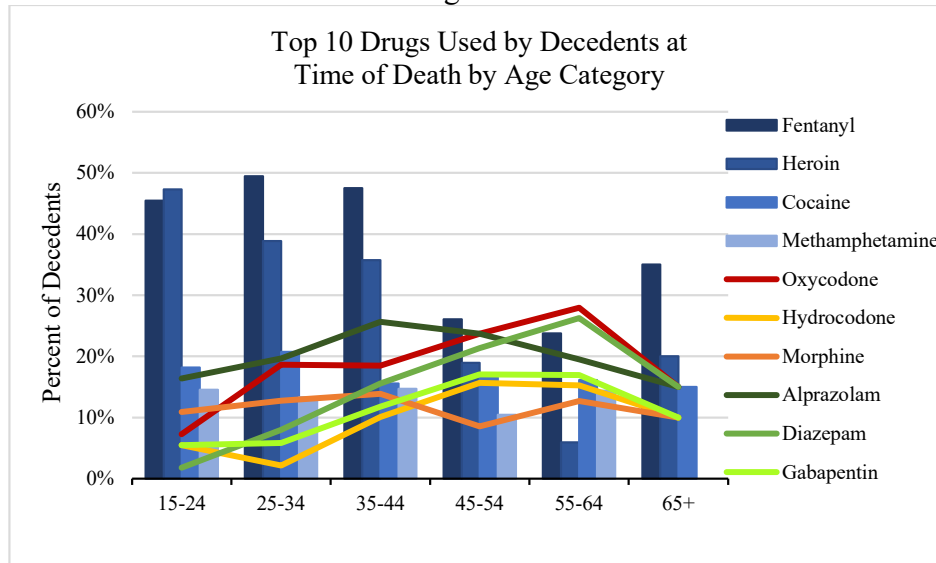
Opioid prescription medications show an opposite pattern compared to heroin and fentanyl, with a peak in older age groups. Oxycodone particularly showed this pattern with a peak in the 55-64 age group. Oxycodone was the drug that was found most often (28%) in the 55-64 age group. This was the only group that an illicit drug was not the most prevalent. Oxycodone dropped to 15% in 65+ decedents. Generally, hydrocodone increased with age too, with a slight decrease from the 55-64 age group to the 65+ group.

Two benzodiazepines, alprazolam and diazepam, were also prevalent. However, they appear to have different age distributions. Alprazolam was found in more overdoses than diazepam in the 15-24 (16% vs. 2%), 25-34 (20% vs. 8%), and 35-44 (26% vs. 16%) age groups. Both alprazolam and diazepam were found at relatively comparable rates in the 45-54 group (24% vs. 21%). The 55-64 age group was the only group that more decedents had

diazepam (26%) at death instead of alprazolam (19%). Both benzodiazepines were found at the same rate in the 65+ group (15%).

Overall, illicit drugs were involved in more overdoses in the younger age group and the oldest age group, but the age groups that had a lower rate of illicit opioid drugs had an increase in the presence of opioid prescriptions and alprazolam, a benzodiazepine. The co-use of benzodiazepines and opioids is a risk factor for overdose. Furthermore, at least 15% of each age group had one benzodiazepine present at death.

Figure 43

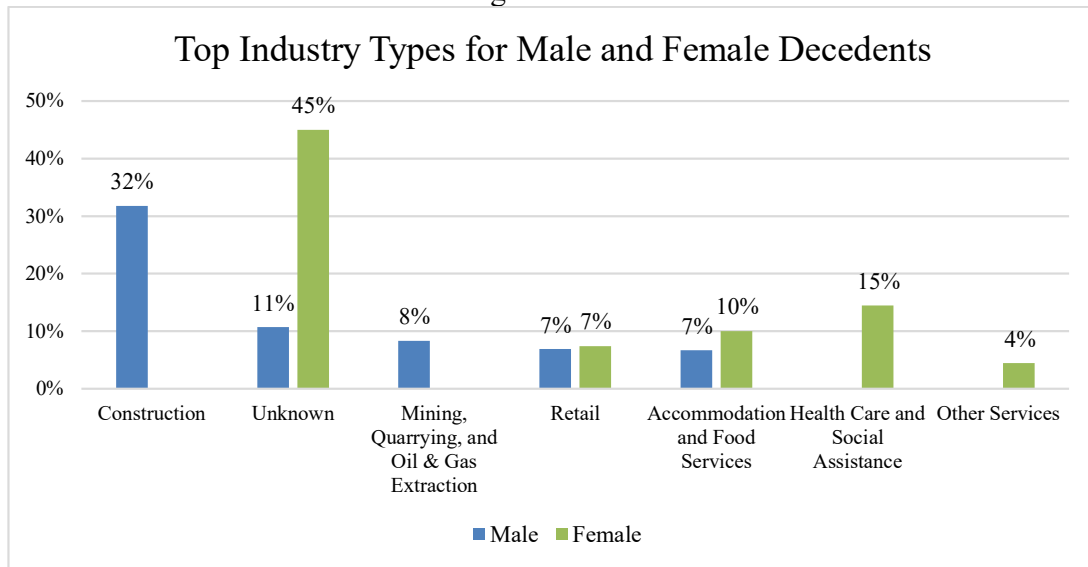


4.9.2 Other Death Record Findings: Industry Codes

Overdose decedents were more likely to work in: construction, accommodation, and food services, retail, healthcare and social assistance, mining quarrying/oil and gas extraction, education, or their industry type was unknown (may include students, homemakers, and unemployed, but these are not the only occupations represented in this group). Construction was the top industry for male decedents with 32% of all male decedents in this group. The largest industry type for female decedents was the unknown category.

Figure 44 shows decedents by the top five industry types for each gender. The retail category includes all sales industries including automotive sales and farm supply sales; it was not limited to retail stores. Industry type suggests that males working in blue collar industry, industries that come with higher risk of injury, may be at increased risk for overdose death. However, it also further illustrates that the drug epidemic is truly affecting everyone.

Figure 44

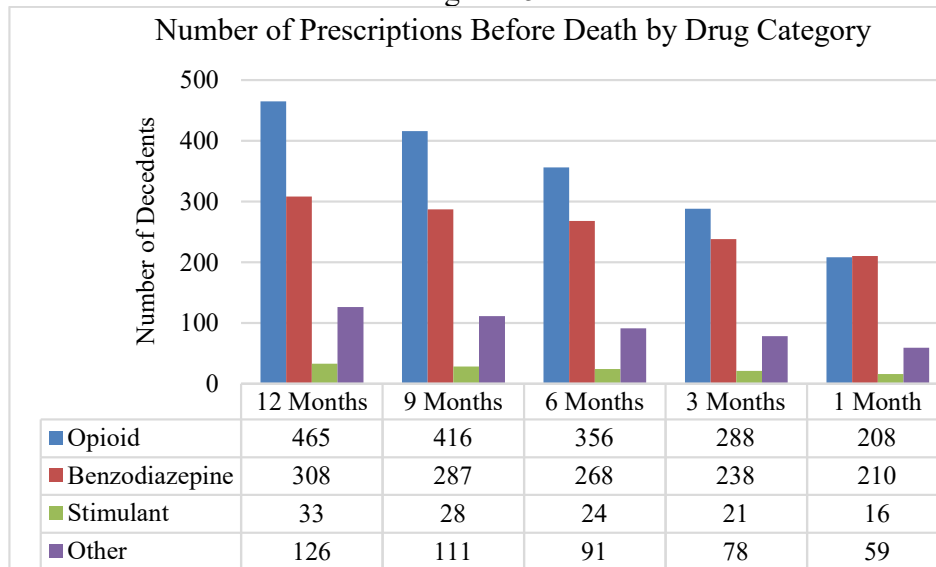


4.10 Other Controlled Substances Monitoring Program Findings

4.10.1 Other Controlled Substance Monitoring Program Findings: Number of Controlled Substance Prescriptions Filled

The number of decedents with an opioid prescription dropped by over half throughout the 12 months prior to death. However, the number of decedents that filled a benzodiazepine prescription did not decrease by the same rate. In fact, at 12 months, 56% of decedents had filled an opioid prescription and 37% of decedents had filled a benzodiazepine prescription. By 30 days prior to death, the percentage of decedents with an opioid prescription had decreased to 25%, which was the same percent of decedents with a benzodiazepine prescription. However, almost 50% of the opioid and benzodiazepines were co-prescribed at 30 days, increasing the risk of accidental overdose.

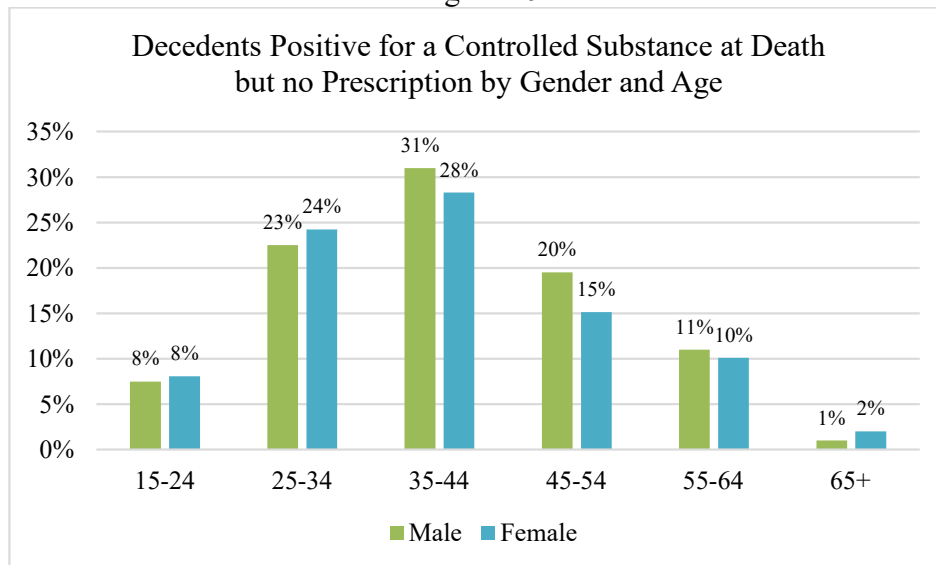
Figure 45



4.10.2 Other Controlled Substance Monitoring Program Findings: Diversion

A total of 272 decedents (33%) tested positive for a controlled substance at death, but had no prescription for that controlled substance. Males were more than twice as likely to have a diverted prescription at the time of death. 68% of males (185) tested positive for a controlled substance that was not prescribed, compared to 32% (87) of females.

Figure 46



4.10.3 Other Controlled Substance Program Monitoring Program Findings: Medication Assisted Treatment (MAT)

According to the SAMHSA, MAT is the use of medications in combination with counseling and behavioral therapies for the treatment of substance use disorders. A combination of medication and behavioral therapies is effective in the treatment of substance use disorders,

and can help some people to sustain recovery (Substance Abuse and Mental Health Services Administration, n.d.); 17,815 (3%) people had a MAT prescription documented in the CSMP, as compared to 58 (7%) decedents. This report was unable to document the utilization of counseling and behavioral therapy for this group.

4.10.4 Other Controlled Substances Program Monitoring Program Findings: Prescriber/Pharmacy Information

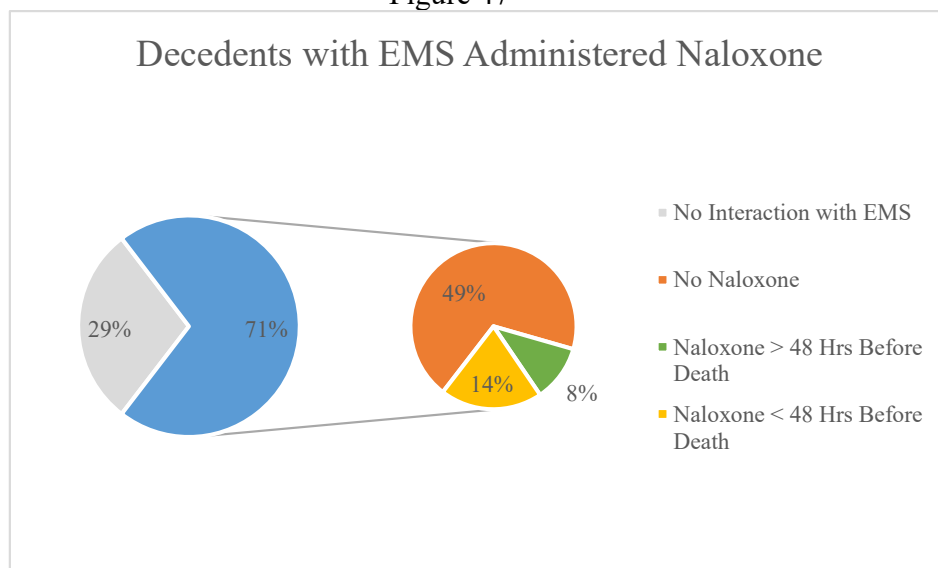
Decedents were three times more likely to have three or more prescribers as compared to the overall CSMP population for 2016 (9% versus 3%). Decedents were more than 70 times likely to have prescriptions at four or more pharmacies compared to the overall CSMP population for 2016 (7% vs. 0.1%).

4.11 Other Emergency Medical Services Findings

4.11.1 Other Emergency Medical Services Findings: Naloxone

Not all decedents interacted with emergency medical services. However, 588 decedents had at least one EMS record in the 12 months prior to death. Of these decedents, 295 only had a documented EMS encounter in the 48 hours before death. Naloxone was administered to 8% of decedents with an EMS run that was not associated with death (greater than 48 hours prior to death). More decedents (14% decedents with an EMS run) received naloxone on an EMS run that was associated with death. This was not surprising considering EMS runs within 48 hours of death are probably associated with the fatal overdose, while runs further from death could be for other conditions besides overdose death. However, it does point to the need for an abundant supply of naloxone to offset the stronger illicit drugs that are becoming more prevalent. It also indicates that nonfatal overdoses may precede fatal overdose in some decedents.

Figure 47

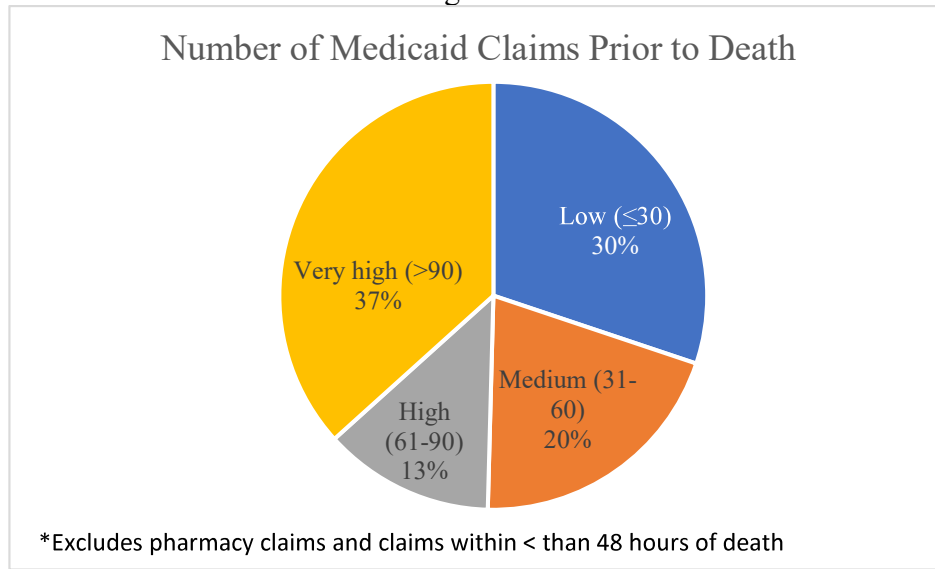


4.12 Other Medicaid Findings

4.12.1 Other Medicaid Findings: Medicaid Claims

Most decedents had ≤ 30 claims or > 90 claims. There are some chronic conditions and illnesses that result in more frequent healthcare utilization. It may be beneficial to investigate the number of decedents with a diagnosis that may require more frequent interactions with healthcare systems.

Figure 48

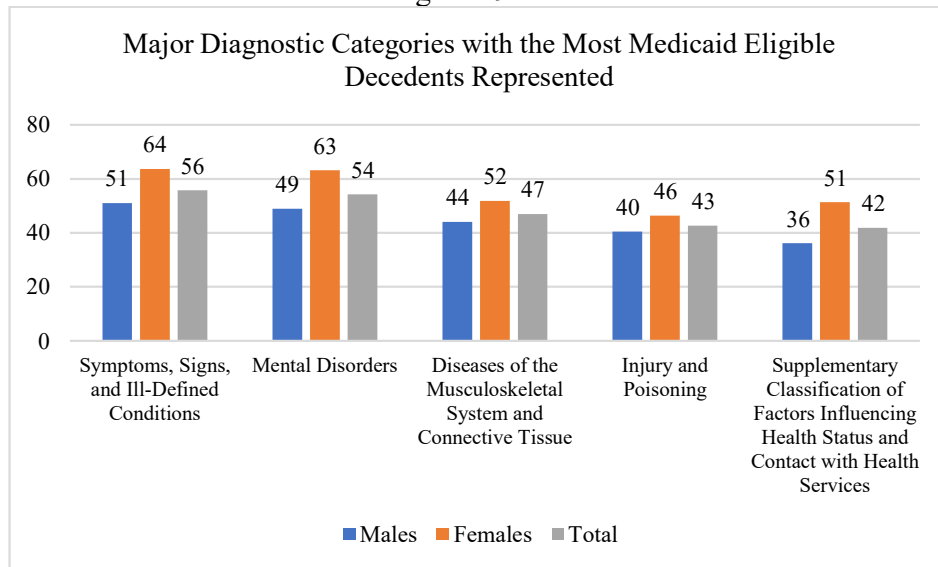


Medicaid claims data were analyzed by ICD-9 major diagnostic categories (the most prevalent classification system within the data set). Only claims occurring prior to the 48 hours before death, but within 12 months prior to death were included. There are 19 general categories with each category being continuously divided into more specific/detailed groups. For the purpose of this report, the focus was on major diagnostic categories. Pharmacy was excluded from this portion of analysis in order to focus on the diagnostic categories.

Proportionally, more females were eligible for and interacted with the Medicaid healthcare system. This may be expected as females are typically more likely to seek care, than males. Specifically, reviewing where these individuals received their care (place of service), most eligible decedents interacted with the Office, ED – Hospital, and Outpatient Hospital at least once.

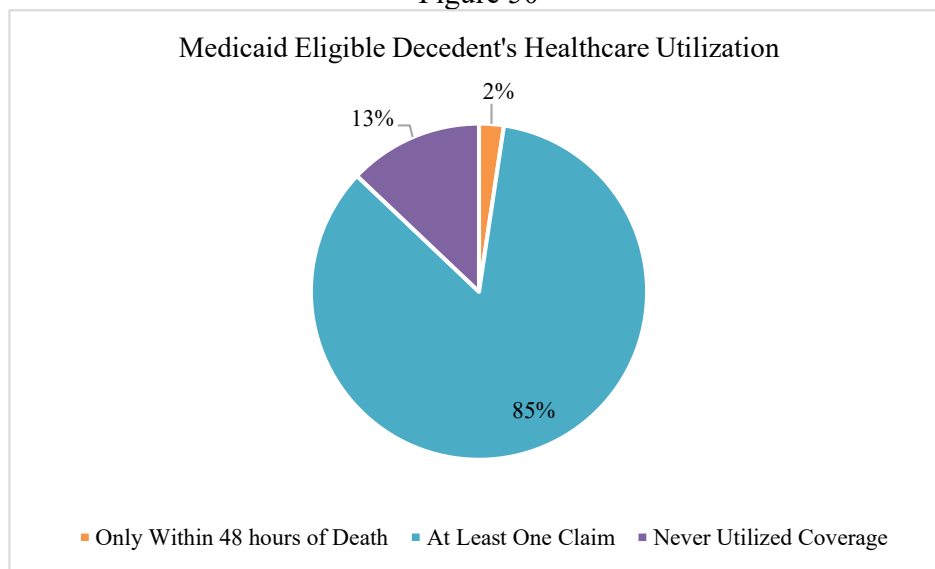
Of the Medicaid eligible decedents, 56% had at least one diagnosis in Symptoms, Signs, and Ill-Defined Conditions, 54% of decedents had at least one diagnosis in Mental Disorders, 47% had at least one diagnosis of Diseases of the Musculoskeletal System and Connective Tissue, 43% of decedents had at least one diagnosis of Injury and Poisoning, and 42% of decedents had at least one diagnosis in Supplementary Classification of Factors Influencing Health Status and Contact with Health Services (see Figure 49).

Figure 49



85% (498) of all Medicaid eligible decedents had a claim within 12 months of their death, but before the 48 hours prior to death. Nearly 13% (76) had no reported utilization, although they were eligible, and 2.5% (14) only utilized services during the last 48 hours of their life.

Figure 50

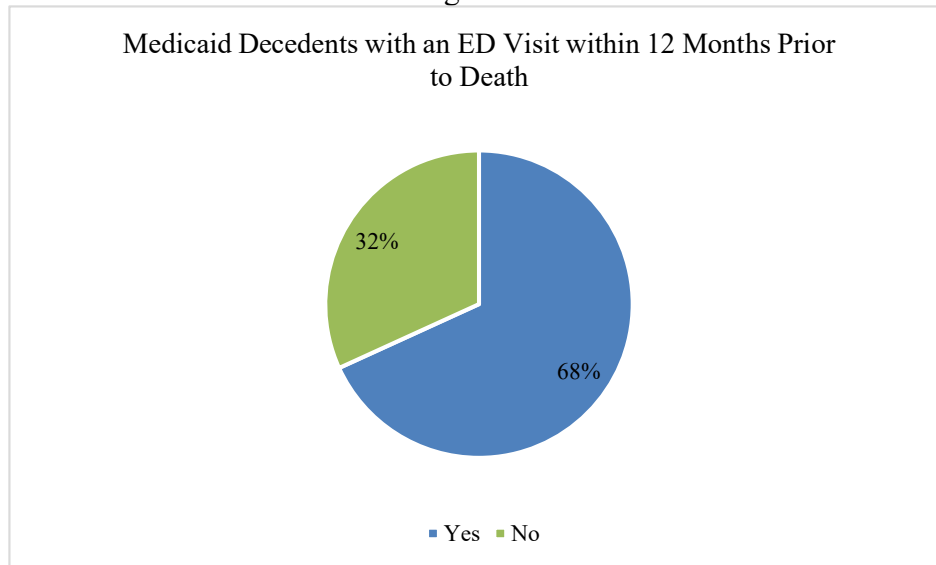


4.12.2 Other Medicaid Findings Emergency Department Utilization

All claims for Medicaid eligible decedents occurring within 12 months of death were included for the purposes of this analysis. Of the 588 Medicaid eligible decedents, 401 (68%) had at least one ED visit in the 12 months prior to death. This represents 48% of the overall decedent population (Figure 51). Females were more likely to have an ED visit in the 12 months prior to death (56%) vs. males (45%). Decedents with a college

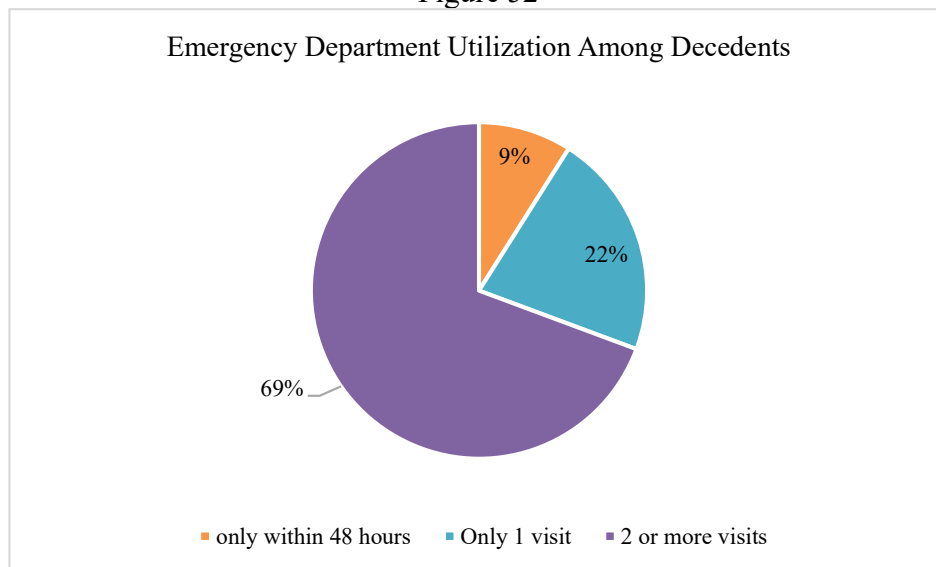
education (26%) were less likely to present to the ED than a decedent with less than a high school education (66%).

Figure 51



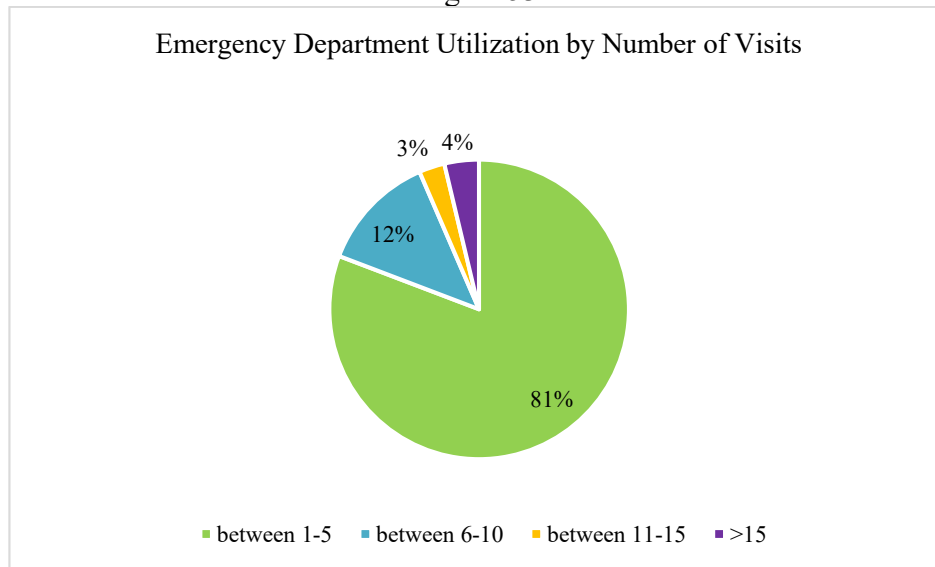
Of the 401 decedents with an ED visit occurring within 12 months of death, 36 (9%) had only a visit within 48 hours of death, meaning there were no other ED visits in the 12 months prior to death. Additionally, 87 decedents (22%) had only one ED visit in the 12 months prior to death, excluding those within 48 hours of death.

Figure 52



The majority (81%) of Medicaid eligible decedents with an ED visit had 5 or less visits in the 12 months prior to death, 4% had more than 15 visits, with the maximum number of visits at 33.

Figure 53



5 Discussion and Recommendations

Substance abuse in West Virginia is devastating communities, families, and the people suffering from addiction. It is straining government resources, including first responders, law enforcement, corrections, health departments, and the West Virginia Department of Health and Human Resources Office of Chief Medical Examiner. One of the purposes of this report was to analyze one year of overdose deaths from the viewpoint of system utilization in order to identify opportunities to intervene with people at high risk of overdose death.

Quality health data are essential to high quality, timely, and actionable public health surveillance. Like most health information systems in the state, those health systems contributing data for this analysis have developed data collection systems independent of one another. To improve the availability, quality, and timeliness of surveillance data to further guide actions to address the opioid epidemic, future health information system development in the state should occur via a participatory process, seeking partnerships from all possible stakeholders.

The results of this report demonstrate that most decedents (815) interacted with at least one of the identified healthcare systems before they died. This suggests that there are opportunities to offer screening, referral, and/or treatment to prevent overdose death and give people a chance to recover. However, not all people interact repeatedly with these resources, so each organization must be prepared to offer treatment at the time of interaction or have an established system for follow-up. This will be especially challenging for agencies that provide emergency services, including EMS and hospital EDs.

Decedents were much more likely to have Medicaid than the general adult population (71% versus 23%). This indicates that individuals could access healthcare. While this report cannot identify definitively what portion of the non-Medicaid decedents have insurance, or are uninsured, the higher than expected rate of Medicaid coverage does indicate efforts to reduce

overdose deaths via medical services has the potential to reach a significant portion of individuals at risk of fatal overdose. Implementation of the Medicaid 1115 Waiver will expand opportunities for treatment and recovery services.

Over one third of decedents interacted with the state sponsored mental health system, BBHMF, prior to their death. However, much of that interaction occurred greater than 12 months before they died. The State should explore strategies to retain people in mental health treatment who abuse substances, as this may be a protective factor in preventing overdose death.

There appears to be a disparity in the emergency response to older West Virginians. EMS responders and the public may benefit from education regarding overdose in this age group to increase the chance that someone will call emergency services and that appropriate administration of naloxone is offered.

It is possible that when a person overdoses, there is a fear to call for help. While West Virginia has taken steps to decrease consequences for bystanders that call for help, there may be some populations that are still afraid to notify emergency services especially when illicit drugs are involved. Further education of the public regarding this issue may increase the likelihood that a person who is overdosing gets the help they need.

It is apparent that prescribers are becoming more cautious with opioids. However, co-use of benzodiazepines and opioids is known to increase the risk of overdose and it is recommended that they are not co-prescribed. To complicate matters further, benzodiazepines are an important tool in a physician's arsenal, and are often used to treat mental health conditions that can co-occur with a substance use disorder, such as anxiety. At minimum, if a healthcare provider prescribes either an opioid or a benzodiazepine, they should make certain that they have a full understanding of what other prescribed medications or drugs the patient may be taking to avoid unintentional overdose from prescribed medications. This presents additional opportunity for the CSMP to be used as a tool to reduce overdose deaths. Officials responsible for development of CSMP policies and procedures could consider the development of proactive reports to alert prescribers about the increased risk of overdose and potential misuse or diversion for those individuals known to the CSMP.

Since many of the decedents had a history of incarceration, it would be beneficial to consider how the Corrections system might contribute to the reduction of overdose deaths. Officials from the West Virginia Department of Military Affairs and Public Safety (Corrections) reported that there is not a uniform strategy for how people identified with a substance abuse disorder are referred to services in their community. This presents an opportunity to work with judges and corrections staff to assure naloxone availability, treatment referral, and peer supports.

While the overdose deaths in this report were a tragedy for the individuals, their families and communities, this data demonstrates that there are opportunities to prevent future death. This report established a process for reviewing data from multiple systems. Because of the urgency to slow and stop preventable overdose deaths, this report was released quickly to assist strategic

planning. Future reports will benefit from the lessons learned, and will be able to identify even more opportunities for intervention for those people at highest risk of overdose death.

Summary of Key Recommendations

- Each entity interfacing with individuals at high risk for overdose must be prepared to offer screening, referral, and/or treatment to prevent overdose death and give people a chance to recover.
- Require prescribers to run a CSMP report on each patient prior to prescribing any schedule II drugs, any opioids, and any benzodiazepines. Exceptions might include cancer patients and terminally ill patients.
- Enhance CSMP Advisory Committee legislation to identify abnormal or unusual prescribing and dispensing patterns and to permit sharing this data with appropriate professional licensing boards and other agencies.
- Develop CSMP policies and procedures for proactive reports to alert prescribers about the increased risk of overdose and potential misuse or diversion for those individuals known to the CSMP.
- All healthcare professionals would benefit from continuing education opportunities that help them to identify risk factors for overdose death and retain individuals in substance abuse treatment.
- Corrections officials should work with judges to assure naloxone availability, treatment referral, and peer supports at release of incarceration.
- Prescribers should consider offering naloxone for individuals at increased risk for opioid overdose.
- EMS responders and the public may benefit from education regarding overdose signs and symptoms. This education should include information specific to individuals older than 65 years to increase the chance that someone will call emergency services and that appropriate administration of naloxone is offered.

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